Vol. X MARCH, 1920 No. 3

AMERICAN JOURNAL OF PUBLIC HEALTH

THE JOURNAL *of the* AMERICAN PUBLIC HEALTH ASSOCIATION

MAY 1 1920

THIS MONTH YOU HAVE

The Fundamental Subject of Child Hygiene, by A. J. McLaughlin, M.D., F. S. Crum, Ph. D., H. O. Jones, M. D., C. W. East, M. D., and Grace Whitford, M. D.

With Suggestions from Atlantic Shore, Gulf and Great Lakes

Help for Health Officers in Budgets, by E. C. Meyer, Ph. D. and Haven Emerson, M. D.

Aboriginal Health Practices in Africa, by P. A. E. Sheppard, M. D.

SAN FRANCISCO MEETING, A. P. H. A.
AUGUST 30—SEPTEMBER 3, 1920.

PUBLISHED MONTHLY AT
124 W. Polk STREET, Chicago, Ill.

ADDRESS MATTER FOR PUBLICATION TO
EDITORIAL OFFICE, 169 MASSACHUSETTS AVE.
BOSTON, MASS.

Subscription Price, $4.00 per Year. Single Copies, 50 cents.
A. P. H. A. Membership, Including Subscription, $5.00 per year.

Application for Entry as second-class matter at the post-office at Chicago, Ill., pending.

An Inexpensive High Quality

ELECTRIC DRYING OVEN

Pittsburgh Model

2204. DRYING OVEN (*Sterilizer*), ELECTRIC
PITTSBURGH MODEL

Three heats, approximately 100°, 200° and 300° C. Has no automatic regulator, yet will hold a very even temperature.

Recommended as a sterilizer for glassware and soil bacteria, a drying oven for flour testing and domestic science, and for many other scientific and technical laboratory purposes.

Inside measurement, 10x11x6 inches, with one shelf. Mineral wool between the inner and outer steel walls; nickeled trimmings; glass door; shutter controlled ventilators.

COMPLETE WITH 300° C THERMOMETER, PLUG AND 6 FEET OF CORD . . . $25.00

IN STOCK FOR IMMEDIATE DELIVERY

SCIENTIFIC MATERIALS COMPANY

Everything for the Laboratory

PITTSBURGH, PA.

American Journal of Public Health

Official Monthly Publication of the American Public Health Association

169 Massachusetts Avenue, Boston, Mass.

Subscription price, $4 per year. American Public Health Association membership, including subscription, $5 per year.

MARCH, 1920 CONTENTS Vol. X, No. 3

	Page
Methods for the Defense of Public Health Appropriations By Ernst Christopher Meyer, Ph. D.	201
What Should be Done in the Control of Degenerative Diseases? By Frederick S. Crum, Ph. D.	210
Studies on Malaria Control By C. C. Bass, M. D.	216
A Standard Budget: The Health Officer's First Need By Haven Emerson, M. D.	221
Vital Statistics in Canada By R. H. Coats.	224
African Aboriginal Therapy By Philip A. E. Sheppard, M. D.	227
Causes of Army Rejections: What Health Officers Can do to Remedy Conditions By Frank R. Keefer, Col. M. C., U. S. A.	236
An Ideal Program for Child Hygiene By Allan J. McLaughlin, Asst. Surgeon General, U. S. P. H. S.	240

Continued on Page VII

Be Sure It Is

The Original **And Genuine**

THAT YOU DRINK YOURSELF OR PROVIDE FOR YOUR FAMILY

The genuine "Horlick's" costs no more than inferior imitations, and its delicious and healthful quality assures the utmost satisfaction from the use of Malted Milk.

At Fountains and Drug Stores. (Take a package home with you.)

For Free Sample or Information as to the Use of "Horlick's" by the Young, the Adult or the Aged, Write—

HORLICK'S MALTED MILK CO., Racine, Wis.

ARE YOU familiar with the GILLILAND LABEL?

DO YOU know that the word GILLILAND on Biological Products means they are

SAFE—RELIABLE—DEPENDABLE?

ARE YOU familiar with the GILLILAND METHOD of furnishing State and City Departments of Health and Institutions receiving State aid with their supply of Biological Products?

COMMUNICATE with us, and allow us to submit the GILLILAND proposal for supplying Public Health Departments and Institutions.

THE GILLILAND LABORATORIES, Inc.

Producers of Biological Products

AMBLER, PENNA.

Executive Offices:
Ambler, Penna.

Laboratories:
Ambler, Penna.
Marietta, Penna.

MARCH, 1920 CONTENTS Vol X, No. 3

Continued from Page V

	Page
The Illinois Program in Child Hygiene for the Coming Year. By Clarence W. East, M. D.	241
Need of Standardization in School Hygiene Methods. By H. O. Jones, Ph. G., M. D.	243
School Hygiene for Rural Communities. By Grace Whitford, M. D.	246
Some Important Factors in the Preparation of Culture Media. By Lewis Davis	250
Health Hazards of the Dye Industry. By A. K. Smith, M. D.	255
Editorials:	
An Aftermath of the War	258
Why Not Sanitary Schoolhouses?	259
A Successful School of Public Health	260
Dr. Hugh Smith Cumming	261
Books and Reports Reviewed	262
Association News:	
Health Employment Bureau	266
List of New Members	266
Why Not 7,500 A. P. H. A. Members?	267
A Word About San Francisco	268
Little Round-Up of Tuberculosis Items	269
Public Health Notes	274
State Health Notes	284
Conventions, Conferences, Meetings	292
Industrial Hygiene and Occupational Disease	293
Public Health Laboratory Notes	295

INDEX TO ADVERTISERS

	Page
BIOLOGICAL PRODUCTS	
Gilliland Laboratories, Inc.	VI
Harmer Laboratories	XV
Illinois Research Laboratories	XXVIII
Lederle Antitoxin Laboratories	XXX
Squibb & Sons, E. R.	XIII
FOOD PRODUCTS	
Borden's Farm Products Company, Inc.	XXIX
Horlick's Malted Milk Co.	V
Mellin's Food Company	XII
Quaker Oats Company	XXVII
HELP WANTED	XXXVI, XXXVII
INSURANCE CO. SERVICE TO HEALTH OFFICERS	
Metropolitan Life Insurance Co.	XXXV
Prudential Insurance Company of America	XXXIV
LABORATORIES	
Abbott Laboratories	XVII
Bendiner & Schlesinger	XXXVII
Boston Bio-chemical Laboratory	XXXVII
Pease Laboratories, Inc.	XXXVI
LABORATORY APPARATUS AND SUPPLIES	
Bausch & Lomb Optical Co.	XXXIX
Central Scientific Company	XVIII
Culture Media Co.	XXXVI
Daigger & Co., A.	XXXVIII
Digestive Ferments Company	IV
Elmer & Amend	Back Cover
Greiner Company, Emil	XXIX
International Equipment Company	XXXVIII
E. Leitz, Inc.	XXXI
Laboratory Animal Supply Co.	XXXVI
Machlett & Son, E.	XXIII
Mahady Company, E. F.	XIV
Parks, Davis & Co.	IX
Pease Laboratories, Inc.	XXXVI
Physicians Laboratory Supply Company	XXXII
Sargent & Co., E. H.	XXII
Scientific Materials Company	II
Spencer Lens Company	XXVIII
Thomas Company, Arthur H.	XVI
LIQUID CHLORINE & APPARATUS	
Electro Bleaching Gas Company	X
Wallace & Tiernan Co., Inc.	XI
PUBLIC HEALTH SCHOOLS	
Harvard Medical School	XXXII
University of Pennsylvania	XXXVII
Yale University	XXXII
PUBLISHERS AND PRINTERS	
Health Stories for Teachers and Pupils	XXXVI
Macmillan Company	VIII
Standard Methods of Water Analysis	XII, XXXIII
SANITARY ENGINEERS	
Fuller & McClintock	XXXVII
Hill and Ferguson	XXXVII
Hoad & Decker	XXXVII
Metcalf & Eddy	XXXVII
Weston & Sampson	XXXVII
SANITARY TOILETS	
Chemical Toilet Corporation	XXI
Pease & Co., P. L., Inc.	XXXI
DON'T OVERLOOK THESE	
American Telephone & Telegraph Company	XIX
Associated Service Bureau	XXXVII
Burnitol Manufacturing Co.	XXV
Clay Products Association	XXVI
Educational Exhibition Co.	XXVIII
Globe-Wernicke Co.	XXIV
National Motion Picture Company	XXIX
Puro Sanitary Drinking Fountain Company	XXIII
Railway Utility Company	XXIV

A Message of Hope to the Addict, to the Public, as Well as to the Physician, is Contained in this New Macmillan Book

The Narcotic Drug Problem

Narcotic Drug Addiction----A Disease

By

ERNEST S. BISHOP, M. D., F. A. C. P.

Clinical Professor of Medicine, New York Polyclinic Medical School; Member Narcotic Committee, Conference of Judges and Justices of New York State; Committee on Habit-Forming Drugs, Section on Food and Drugs, American Public Health Association; Fellow Academy of Medicine, Consulting Physician, St. Joseph's Tuberculosis Hospital; Consulting Physician to St. Mark's Hospital; one time Resident Physician to the Alcoholic, Narcotic and Prison Wards of Bellevue Hospital.

12mo Cloth Price $1.50

The publishers believe they are safe in saying that no other man in the United States has as broad a knowledge of narcotic addiction as the author of this remarkable little book. It is an impersonal survey of the whole situation. Dr. Bishop discusses the modern conception of *opiate addiction as a disease* and states how this real disease should be treated as are other diseases. This is in direct opposition to the popular conception that addiction is a "vice," a "habit," a "morbid appetite," and should be punished socially as well as legally.

TABLE OF CONTENTS

Chapter
I. Introduction.
II. Fundamental Considerations.
III. The Nature of Narcotic Drug Addiction Disease.
IV. The Mechanism of Narcotic Drug Addiction Disease.
V. Remarks on the Methods of Treating Narcotic Drug Addiction.
VI. The Rational Handling of Narcotic Drug Addiction Disease.
VII. Relation of Narcotic Drug Addiction to Surgical Cases and Inter-current Diseases.
VIII. Laws and Their Relations to Narcotic Drugs.
IX. Some Comments Upon the Legitimate Use of Narcotics in Peace and War.
X. General Survey of the Situation and the Need of the Hour.
Appendix Human Documents—Personal Statements.

Send for Medical Catalog of Other New Important Books

THE MACMILLAN COMPANY

64-66 Fifth Avenue - - - New York City

APR 30 1920

©CLB459436

American Journal of Public Health

Official Monthly Publication of the American Public Health Association

Publication office: No. 124 W. Polk Street, Chicago, Ill.

Editorial office: 169 Massachusetts Ave., Boston, Mass

Subscription price, $4 per year. American Public Health Association membership, including subscription, $5 per year. Subscriptions and memberships may be sent to the A. P. H. A., 169 Massachusetts Ave., Boston, Mass.

Vol. X MARCH, 1920 No. 3

METHODS FOR THE DEFENSE OF PUBLIC HEALTH APPROPRIATIONS

ERNST CHRISTOPHER MEYER, PH. D.,

Director of Surveys and Exhibits, International Board of the Rockefeller Foundation.

Read before the Section of Public Health Administration, American Public Health Association, at New Orleans, La., October 29, 1919.

This paper will be especially helpful to the health officer because it tells him things he needs to know; for example, the place for arguments based on comparisons, on expenditures, on efficiency and on results attained, that will carry weight with intelligent public bodies. Statistics are given their place, as an index of the real value of health work, with a warning against crude statistics.

This paper is addressed more particularly to public health officers in the smaller communities to whom the literature of public health administration is seldom readily accessible and who, no matter how ambitious they may be to render the best possible service, are greatly handicapped by inability to keep in touch with progress in the public health field. Unfortunately, I can not speak as a practical administrator of public health, but appear before you rather as a student of public health administration, or if you please, as a student of government administration in general.

In late years expenditures for health purposes have been mounting rapidly by millions of dollars. A series of careful compilations and estimates, based on the best sources available, permit of the statement that, exclusive of the federal government, we are today spending about $33,700,000 per year for health conservation. Of this huge sum $11,250,000 were spent, in 1917, by State Boards of Health and other state agencies alone. Cities of over 30,000 population spent no less than $15,950,000 in the same year. Smaller cities spent about $3,000,000, and counties about $3,500,000. Only fifteen years back, in 1902, the total expenditures for health purposes by these same administrative authorities were but about $9,500,000. There was hence an increase of about 355 per cent. in the expenditures for health purposes within fifteen years.

As public attention centers more and more on public health work, it becomes increasingly important that the health

officer develop his case before the appropriating body along thorough, scientific, and convincing lines, and that in doing so he has in mind also the educational value of a properly prepared argument.

It is hoped that the things here put forth will prove of assistance in meeting this growing obligation.

In refreshing your memories on certain useful reservoirs of information and planning a line of argumentation, it is proposed to consider the material under several general headings.

1. Arguments dealing with expenditures for public health purposes.
2. Arguments dealing with scope or quality of work done.
3. Arguments dealing with the efficiency of administrative organization and with the results obtained.

In the brief compass of a fifteen minute paper it is not possible to do more than skip over the general ground here outlined.

THE ARGUMENT OF EXPENDITURES.

Great difficulties surround all attempts at comparisons of expenditures. Things which in fact are unlike may not safely be compared without appreciation of their differences. The objects of expenditures for health purposes in one city are apt to vary considerably from the objects of expenditure for health purposes in some other city. So-called health activities differ widely. The inclusion of irrelevant non-health work is not only a great handicap to health departments financially burdened in this manner, but thoroughly removes the possibility of fair comparison.

Furthermore, in only rare instances do the statements published by health officers distinguish between outlays in the form of capital expenditures for hospitals and other buildings and for expensive equipment and furniture, and the current expenses of operation of the health department. Where this is not done it is obviously impossible to compare the expenditures of one city with those of another city on the basis of the cost of the work. In 1917 cities of over 30,000 population spent $15,945,361 for current expenses of health conservation and no less than $2,208,951 for capital outlays, or 14% of the total spent on health work.

It is true also that health work is not always concentrated in the health department. School medical inspection may rest with the bureau of education or with the health department. Industrial hygiene may be the function of some special industrial commission, rather than of the health department. The total expenditures for health purposes as given out by health departments in such cases do not express the actual sums of money devoted to public health work.

However, the expenditure argument has its uses. The example of others has its force. There are various ways in which comparisons of expenditures may be made. Nor are the statistics of expenditures for health purposes, unlike other statistics in that you can, by proper manipulation, make them tell most any sort of story. Among the different comparisons, which may readily be made are:

1. Comparison of per capita expenditures for health conservation. If you are health officer at Morristown, New Jersey, you may, if you wish, point with sorrow to the fact that this city of 13,410 population in 1917 spent only $.07 per capita for health conservation, whereas Brookline, Mass., with a population of 33,526 spent no less than $1.58. On the other hand, if you are health officer of Brookline you would not be able to use the comparison of per capita expenditure for health as an argument for increased appropriations. You will find that on that basis you are evidently already spending more than you ought to.

Various guesses have been made as to how much per capita should be devoted to public health purposes. These vary from $.50 to $1.00 and more. It is of interest to note that many cities have

already exceeded this per capita expenditure. This suggests discretion in commitment to a standard of this sort as it might prove a boomerang. What may seem to be a very large expenditure at the present time may be quite insignificant at some future date. The tremendous increase in health appropriations tends to confirm this point of view.

2. A comparison of expenditures for various years within the same city has distinct value on the theory that the amount of public funds used for health purposes should at least keep pace with the growth of the city and the consequent expansion of the public health problem.

3. Another way of doing is to compare the expenditures for health conservation with those of other activities of the city government, as for example, the fire department, police department, education, charities, etc. The per cent distribution of the expenses of city governments in this manner likewise varies tremendously. Taking all cities of over 30,000 population as a whole with a total population of over 33 million, and total expenditures in 1917 for all purposes of municipal government of $634,345,219, we find that conservation of health represented but 2.5 per cent of the total expenditures of these cities. Schools alone took up 31 per cent, police departments 10.9 per cent, highways 10.6 per cent, fire departments 8.6 per cent, and sanitation, or the promotion of cleanliness 7.6 per cent.

Health officers in search of financial data will find a considerable body of information on this subject available in the publications of the Division of Statistics of States and Cities of the U. S. Census Bureau. The Statistics of Cities have appeared since 1902, those of States since 1915. The Statistics of Cities, published annually, cover all cities of 30,000 and over. In addition to these annual volumes, Statististics of Cities of 8,000 to 25,000 appeared in the report on "Wealth, Debt and Taxation" of 1902, and in a special report for cities for 1903. In 1903 and 1913, Statistics of Cities of 2,500 and over were published in "Wealth, Debt, and Taxation," and in 1913 also in the report on "Municipal Revenues, Expenditures, and Public Properties."

The annual reports on Statistics of Cities cover expenditures of all cities of over 30,000 population. The volume of 1917, by way of illustration, contains 373 quarto pages. We find here a classification of the expenditures of city governments for all purposes in minute detail. Those concerning health conservation are given under the following heading:

I. Health Department Administration.
II. Vital Statistics.
III. Prevention and Treatment of Communicable diseases.
    1. Tuberculosis.
    2. Other communicable diseases in hospitals.
    3. Other treatment of communicable diseases.
IV. Conservation of Child Life.
    1. Medical work for school children.
    2. Other conservation of child life.
V. Food Regulation and Inspection.
    1. Milk and dairy control.
    2. Other food regulation.

In addition to some general tables there are tables, from which I have already quoted, which indicate the amount spent per capita by different city departments. There is a wealth of diagrammatic material dealing with interesting summaries and comparisons. Each volume is in itself a liberal treatise on government accounting and bookkeeping.

The annual publication of Statistics of States covers the same ground and is gotten out in a uniform manner with that covering cities.

The usefulness of these statistical data to health officers who wish to fortify themselves before appropriating bodies by calling forth comparisons with what other cities are doing may well be emphasized. I have observed very erroneous impressions as to the accuracy of

these statistics based on wrong ideas as to how they are compiled. It may not be clear to you why the Bureau of the Census should be able to produce statistics of a higher degree of comparability than are compiled or can be compiled by the health officers of the various municipalities themselves.

The explanation is simple and illuminating. The Bureau of the Census employs trained accountants who are given highly technical office instruction before being sent out. They are armed with an elaborate book of instructions covering almost every conceivable question that might be raised in the performance of their duties. They spend from a few weeks to a number of months in the various cities gathering up from the public records the statistics on expenditures for the various purposes of government. If necessary, they go back to the original vouchers, or to the detailed accounts, to reclassify the information so that it may conform to the uniform plan that has been adopted. The result is that the statistics given out by the Census Bureau are, with few exceptions, the only statistics published which present expenditures for health conservation on a reasonably comparable basis.

It may not be amiss here to emphasize the unfortunate lack of comparability of the financial statistics of our governments and the lack of uniformity in accounting systems, method of budgeting, and reporting. The fact that capable and trained accountants must at times spend months in middle sized cities to juggle statistics of governmental expenditures into the forms of a standardized plan is striking comment on the conditions which at present prevail. Nor can we look forward to any remedy of this condition of affairs until the municipal and state governments of this country come to recognize more clearly the importance of adopting not merely budgets but standardized budgets and uniform systems of accounting and reporting. The subject of budgets will receive attention in a paper in this section by Dr. Haven Emerson.* Uniform accounting has been under consideration by the committee on uniform accounting for health departments.

Such progress as is being made at this time is difficult and slow owing largely to lack of interest and understanding on the part of public health officers of the significance and fundamental importance of statistical data to their own work.

Aside from the comparable statistics published by the Bureau of the Census, reference may be made to statistics published by various state statistical bureaus, as for example, the Municipal Division of Statistics of the State of Massachusetts, the work of which has received national recognition through the efficient guidance of Dr. Charles F. Gettemy; various investigations of the U. S. Public Health Service, notably the reports of Dr. Carroll C. Fox, Dr. Taliaferro Clark, Dr. Paul Prebble and Dr. S. B. Grubbs have also provided health officers with much useful information.

Such private institutions as the Bureau of Municipal Research of New York City, the public health work of which is in the hands of Dr. Carl McCombs, the Detroit Bureau of Government Research, and of similar institutions in some of the other large cities, have much useful data in their libraries for the assistance of health officers. Legislative reference departments which have been organized in many states, and municipal reference divisions which have been organized in connection with some of our largest universities are also in a position to assist the health officer who thirsts for information. These agencies were all created to serve the public. They welcome letters of inquiry.

THE ARGUMENT OF WORK DONE.

Where the appropriation authorities are interested in something more than whether the funds asked for are as great

*See this issue of the JOURNAL, page 291, for this paper.

or greater than those called for in preceding years, or whether they compare favorably or unfavorably with similar expenditures by other cities, or whether they represent a proper proportion of the total expenditures of the city or state, the health officer may be called upon to justify the necessity of carrying on certain lines of health work and to establish their intrinsic practical public health value.

Back in 1915, one of the leading health officers of the country wrote:

> There is probably not a single large municipal health department in the country which is operated along strictly logical lines. They are mostly ill-balanced. Much is done that counts little for health and much is left undone which would save many lives.

This may not be as true in 1919 as it was when uttered by Dr. Chapin in 1915. There is much reason to believe that health officers are willing to admit that there is a great deal more of truth to it even today than there should be.

Health officers, of course, cannot always determine for themselves what work shall be done or shall not be done. On this, if I may once more quote Dr. Chapin, we are told:

> Much of the mischief comes from without. The health officer is not allowed to map out his work. It is mapped out for him. The ambitious councilman and the enthusiastic reformer are often neither well balanced nor logical. They see only one thing. They think that their pet project is more important than all other health work put together. They have push, and sometimes pull, and burden the health department with new expenses when no money can be obtained for old and tried lines of work. The average man, or quite as often it is a woman, gets his or her scientific knowledge from the Sunday edition of the yellow press or from some ten-cent magazine. When the reformers' fire is kindled in this way no one can tell what the result will be, but it certainly will not be a well-balanced health department.

It is possible that not all of you can make readily accessible for your use what current literature there is on the important subject of relative values in public health work. The importance of constant attention to this by men who are charged with the expenditure of over $33,000,000 of public funds is obvious. Little has thus far been published specifically on this point, but most of what has been given out is suggestive and exceedingly helpful. It is interesting, too, that the few writers who have tackled this difficult subject in a concrete and definite manner show a constant evolutionary progress in the development of the general thesis. Back in 1912, Professor George C. Whipple in the American City published a paper under the title "How to Determine Relative Values in Sanitation." In 1913, there appeared Dr. Chapin's "How Shall We Spend the Health Appropriation." In 1914, Dr. D. D. Armstrong discoursed on "Public Health Values—a Few Modern Fallacies." In 1915 appeared Dr. Chapin's "Effective Lines of Health Work"; and in 1916, we were favored with what seems to be the latest and, in spite of the many doubts it leaves unsettled, most scholarly presentation of this subject, Franz Schneider, Jr.'s "Relative Values in Public Health Work." Quite obviously in considering this material one must bear in mind the fact that the values set down by these men of necessity have a different rating in different parts of the country and in rural regions as against urban conditions of life, and that at best they are frankly pioneer effort.

The following table shows the relative values attached to the various lines of health work by Mr. Franz Schneider, Jr.:

Tuberculosis	12.1
Venereal Diseases	6.6
All other communicable diseases	25.3
Infant Hygiene	20.3
Privy and well sanitation	3.5
Milk Control	2.7
Fly and Mosquito suppression	2.4
Food sanitation	0.1
Inspection of school children	7.0
Vital statistics	5.0
Education	5.0
Dispensary and clinics	5.0
Laboratory	5.0
Total	100.0

One of the most interesting though not wholly novel methods of defense of health appropriations, on the ground of effective lines of work followed, was em-

ployed by Dr. W. S. Rankin, the efficient health officer of the State of North Carolina. The details were published in the Health Bulletin of that state in February, 1919, under the title "Dividends on Investments in Public Health." In exceedingly concrete fashion, we have here set forth item by item the estimated value in dollars and cents which the people of the state have received in return for their appropriation for public health purposes. By way of illustration I will quote a few items. The paper in question enumerates exactly twenty items.

Item 4. The State Laboratory of Hygiene has distributed annually for the last two years 248,876 doses of typhoid vaccine, 7,896 doses of whooping cough vaccine, and 29,580 doses of smallpox vaccine, which vaccines, if purchased at the ordinary retail price, would have cost a minimum of $100,000. This $100,000 is, then, a fourth dividend paid on the State's investment of $86,991.13 in the health of her people.

Item 5. The State Laboratory of Hygiene has distributed annually for the last two years 2,412 doses, or 12,060,000 units, of diphtheria antitoxin. The antitoxin, distributed free of cost to the people in 1918, at the old retail price would have cost $12,060. The antitoxin distributed in 1917, at about one-fourth the previous retail price of antitoxin, saved our people an additional $9,000, making a total saving on diphtheria antitoxin of $21,000 for the last two years, or an annual saving of at least $10,000. But this by no means represents the total amount saved under this item to the citizens of North Carolina. Commercial manufacturers of antitoxin, in order to sell their product at all in North Carolina in competition with the State's free antitoxin, have had to cut their original price to one-third of what it was. The people are now paying only one-third of what they otherwise would have to pay for the antitoxin of private manufacturers. The arrangement of the State Board of Health for supplying antitoxin to the people of North Carolina saves our State not less than $20,000 a year. This $20,000 is, then, a fifth dividend paid on the State's investment of $86,991.13 in public health.

Even after due allowance is made for the element of inaccuracy or of estimate, the definite figures given by Dr. Rankin in themselves tend to raise in the minds of those who hear them, the presumption of value received.

THE ARGUMENT OF EFFICIENCY IN ORGANIZATION.

Successful defense of appropriations may depend in part upon ability to establish the efficiency of organization. And again where inefficiency in organization exists, the health officer may be enabled to establish an alibi by demonstrating that this lack of efficiency is due to shortcomings largely outside of his department,—possibly to inadequate legislation and imperfect health regulations.

The efficiency in organization may have to do with one or more of five different things, to each and all of which the health officer will need to give close attention if the machinery of his office is to run smoothly and effectively. These are:

1. The form of the machinery of administration, including the organization of the legislative machinery,—the Board of Health, the administrative machinery,—the executive health officer, the bureau and district organization, the distribution of governmental power within the central administration, and between central and local authorities.

2. The personnel, including such matters as method of appointment, promotion, discipline and removal of employes, training and qualifications for office, term of office and compensation.

3. The physical plant, equipment and supplies, including the method of providing the plant, the acquisition of equipment and supplies, storage and inventory, character and effectiveness of the materials to serve the purpose for which acquired.

4. The financing of the health administration, including the provision of adequate funds and development of effective sources of revenue and the proper planning of budgets and financial statements.

5. The business practice and procedure, including the keeping of proper financial accounts, of current administrative records of work done, of property owned, handling and filing of documents, rendition of reports.

THE ARGUMENT OF RESULTS ATTAINED.

1. The crude death rate as an expression of results attained.

The number of people who die each year per one thousand population has long been the accepted measure of mortality. We speak of this measure as the death rate. The reduction of the general death rate is obviously the large

objective of public health work. It is but natural, therefore, that this rate should be utilized by health officers to estimate the influence of their work and to defend their expenditures before appropriating authorities. Such rates must, however, as you will agree, be used with great circumspection. They are double edged swords. They may harm as well as help. The crude death rate of a given city through a series of years may be a fairly accurate index of the fluctuation in the health of the community and may indicate correctly the relative mortality of different years, but when it is used for comparison with other cities blunders can readily be made. For comparative purposes, as we know, conditions must be similar. The populations for which death rates are compared must be in a broad way similar in age and sex distribution and in race, nationality, and occupation. If they are strikingly dissimilar proper corrections must be made. It may not always be possible to go into all refinements of correction, but attention to them is essential if the comparisons which are made are to be convincing. While this seems quite obvious it is of interest to note that corrections of the general death rate, in so far as the evidence is contained in published reports, are very rarely attempted by public health officers.

At best, however, and after all possible corrections have been scrupulously made, the general death rate represents but a poor substitute for a proper means of measurement of the efficiency of health work as a whole. Being a general death rate it represents deaths from all causes and, as is well known, preventable deaths represent only about 33 per cent., or one out of every three, of the deaths which occur in a given community. The use of the crude death rate hence greatly encumbers the comparison and clouds the real issues involved.

On this point Dr. Wilmer R. Batt, Registrar of the Pennsylvania State Board of Health, in his admirable paper "The Sanitary Index" says:

> The general or crude death rate, including deaths from all types of diseases, from old age as well as from all forms of violence, accidental or otherwise, certainly does not form such a standard of measurement of efficiency of health administration, although it is the most frequently employed method of expression in public discussions of the value of public health work. It represents the simplest form of mortality accounting and without appreciation of its insignificance it has been most thoroughly misapplied.

The manner in which this difficulty may be overcome will be presently described. Excellent help in the use of death rates is given in a recently published book "Vital Statistics" by Professor George C. Whipple, of Harvard University. This volume is to be highly commended to health officers for sundry other reasons as well.

2. Death Rates of Individual Diseases as an Expression of Results Attained.

Realization of the shortcomings of crude death rates has caused health officers to resort also to the use of death rates of individual communicable diseases, not only in comparing conditions in a particular city from year to year, but in comparing conditions with other cities. This practice has its distinct value but calls for a good deal of care and exhaustive study if the comparisons are to be worth while. Various corrections for differences in conditions which influence this or that communicable disease will need to be made; and unless the health officer has thoroughly posted himself in advance, the use of individual disease death rates may prove a serious stumbling block when he is subjected to inquisition by a wide awake member of an appropriating board.

3. The Sanitary Index as an Expression of Results Attained.

The sanitary index is constructed by adding the death rates of the acute communicable diseases and tuberculosis, and the death rates of either infants under one or under two years of age, or where

these are not accessible, all deaths from diarrhea and enteritis under two years of age as given by the federal census bureau.* In short, the sanitary index is intended to be a summary expression of the death rates of those diseases which are particularly amenable to control through public health administration or which, at any rate, are the particular object of sanitary effort. No standard, so far as is known, has, as yet, been developed for the construction of a sanitary index.

Beyond the group of diseases included in the sanitary index there exists, as Dr. Batt states, a rather extensive variety of diseases the occurrence of many of which may be influenced by general educational effort to promote personal hygiene. The group first described, however, absorbs the maximum of effort and resources of a public health department. The reduction in deaths for this group may hence be recorded as a fair index of efficiency in conserving life and health through public health agencies.

The death rate which represents all deaths, exclusive of those included in the sanitary index, has been described by Dr. Batt as the "residual death rate." The sanitary index, plus the residual death rate, hence equals the general or crude death rate.

The effective manner in which the sanitary index may be used to express the efficiency of public health work is indicated by the statistics for the State of Pennsylvania covering the ten year period, 1906 to 1915 inclusive. The general death rate during this period declined from 16 per thousand population to 13.8, a reduction of 13.8 per cent. During the same period the sanitary index declined from 6.5 to 4.5, a reduction of 30.8 per cent, while the residual death rate declined from 9.5 to 9.3, a reduction of only 2.1 per cent. Demonstration of a reduction of 13.8 per cent in the crude death rate is not nearly as effective as proof that the death rate from preventable diseases dropped 30.8 per cent.

It is evident, too, from the figures just quoted "that almost the entire reduction that has taken place in the general death rate (in the case of Pennsylvania before us) has been due to the decline in the deaths from those diseases that are the objects of sanitary attack, and when we employ only the general death rate as an expression of progress in public health work, we fail utterly properly to measure the returns accruing from sustained and intelligent expenditures of both knowledge and money in this direction."

The use of morbidity statistics to demonstrate the efficiency of public health work is very important. Although mortality statistics obviously must remain our main reliance to express the results of public health work, the opportunity offered by a careful use of morbidity statistics may not be safely neglected. The case rate provides illuminating information concerning prevalence of preventable sickness in the same manner in which the death rate tells the story of mortality. The case fatality rate in another fashion is exceedingly useful in judging the efficiency of that part of the mechanism of health administration through which sickness in the field of preventable diseases comes to the attention of public health officers. A vast amount of information on the prevalence of preventable diseases is published periodically in the United States Public Health Reports. These statistics show the prevalence of notifiable diseases by individual cities and in population groups from 10,000 up for the entire country. They unfortunately are not as complete as they appear to be.

Health officers who are interested in

*In constructing a sanitary index on the basis of mortality statistics published by the U. S. Census Bureau, it is suggested that the following diseases may consistently be included: Typhoid fever, typhus fever, malaria, smallpox, measles, scarlet fever, whooping cough, diphtheria and croup Asiatic cholera, cholera nostras, other epidemic diseases tuberculosis of the lungs, tuberculosis meningitis, other forms of tuberculosis, diarrhea and enteritis.

securing general information on morbidity conditions are referred to a number of sickness censuses, which were conducted during the last few years. Notable among these are the series of sickness surveys by the Metropolitan Life Insurance Company made in 1915 to 1917 under the direction of Drs. Lee K. Frankel and Louis I. Dublin; the three illness censuses of New York City conducted from 1915 to 1918 by Drs. W. H. Guilfoy and S. W. Wynne; the sickness census of the Framingham community health and tuberculosis demonstration conducted by Dr. Donald B. Armstrong in 1918; the sickness survey of the State Charities Aid Association made by Mr. J. J. Weber in 1915; the report on "Disabling Sickness among the Population of Seven Cotton Mill Villages of South Carolina in Relation to Family Income" by Drs. Edgar Sydenstricker, G. A. Wheeler and Joseph Goldberger, of the U. S. Public Health Service; the report on disability by age and occupation by Dr. Boris Emmet in "Modern Medicine" September 1919.*

These then are among the various lines of argumentation open to the health officer and some of the sources from which helpful facts may be drawn. At all points the local conditions must, of course, be illumined. The best time to begin preparation for defense of appropriations is the first day of the year. The best time to complete the preparation is the last day of the year. And it is certain, too, that the public, which at present is providing over 33 million dollars per year for health purposes, will, in increasing measure, want to be convinced why the amount now being supplied is needed or why even greater sums should be provided.

*This report is being issued officially by the United States Bureau of Labor Statistics.

□

Conjugal Tuberculosis.—An interesting contribution to the question as to whether tuberculous infection occurs more frequently in the other of a married couple when the one is already infected, than would be the case if the parties were not so related, is made by Dr. E. Ward, the tuberculous officer for South Devon, England.

Having on hand a list of some 4,000 cases and contacts, he finds that in the 156 instances where the mate of a tuberculous husband or wife was examined, 91 were found to be tuberculous, 16 suspect and 49 negative, or, expressed in percentages, 58, 10, 32 per cent respectively. In applying a similar analysis to the two classes distinguished accordingly as the husband or the wife was first notified, the divergence in the percentage figures of the groups was not great and was distinctly of the same order. The figures are (a) husband first notified, wife definitely tuberculous 55 per cent, suspected 10 per cent, negative 35 per cent, total cases 120; (b) wife first notified, husband found to be tuberculous on examination 69 per cent, suspected 11 per cent, negative 20 per cent, total cases 36.

Comparing now the results of examining contacts other than husband and wife, out of 1,057 examined, 219 were tuberculous, 284 suspect, and 564 negative; or, roughly, 20 per cent, 27 per cent and 53 per cent. Taking as a further control the contacts of cases seen for an opinion and diagnosed non-tuberculous, either at the time of the first visit or later, out of 81 examined, 4 are found to be tuberculous, 7 suspect and 70 negative; or, in percentages, 5 per cent, 8 per cent, and 87 per cent. Cases of definite surgical tuberculosis and their contacts are included but the number of such cases was relatively small.

Ward takes the view that the great majority of the mates of tuberculous husbands or wives do sooner or later show signs or develop symptoms of tuberculosis; but that the great majority of those infected recover, and make a speedier recovery than most tuberculous patients. This may reasonably be attributed to an enhanced immunity conferred by the graduated doses of bacilli which they usually receive.—E. Ward, *Lancet*, Oct. 4, 1919, 606, Medical Officer, Oct. 25, 1919, 153. (*D. G.*)

WHAT SHOULD BE DONE IN THE CONTROL OF DEGENERATIVE DISEASES?

FREDERICK S. CRUM, PH.D.,

Assistant Statistician, The Prudential Insurance Company of America, Newark, N. J.

Read before Section of Public Health Administration, American Public Health Association, at New Orleans, La., October, 28, 1919.

Dr. Crum's six lines of attack are: bettered scientific methods in infant and pre-school care; extension of school hygiene, medical inspection and physical training, more intensive health education of the people and the extension of industrial sanitation and industrial hygiene.

AS a preliminary to the discussion of this problem, it is desirable that a brief statement be made as to the philosophy of disease origin and causation. The life of a complex organism has been defined as the sum of all those interactions which take place between the various cells constituting the organism and their several environments. All disease is ultimately an improper interaction of cells and their environment. Cell environment may be morbidly modified or affected in various ways and Dr. Campbell* enumerates these under nine headings, as follows:

1. By insufficient, excessive or improper ingesta.
2. By disease of the blood-plasma-forming tissues.
3. By inhalation of insufficient oxygen or nocuous matters; mechanical, germinal or gaseous; also imperfect exhalation of lung excreta. Temperature and dampness of atmosphere also may exert ill effects on the body.
4. By disease of the blood-cell-forming organs.
5. By disease of the respiratory organs.
6. By disease of the vascular system: heart, blood-vessels and their nervous regulating systems.
7. By disease of the excretory organs.
8. By direct nervous influence upon cells.
9. By injurious influence upon the exterior of the body, e. g., violence, extremes of temperature, filth, parasites.

Dr. Campbell also well defines disease as "an abnormal mode of life."

In very recent times emphasis has properly been placed upon the fact that all of the various parts of the body are so closely connected and interrelated that it is almost impossible for one part, organ or function to get out of order without throwing the whole machinery out of gear. To illustrate, a decayed tooth may cause neuralgia, dyspepsia, acute rheumatism or other serious disease or disorder.

In considering the origin of disease, therefore, it is necessary to keep in mind that attacks of sickness or injuries received in early life may often result in future disease. It is not rare that the seed of disease is planted by some attack in infancy or childhood and, after lying dormant for years, develops in middle life or old age.

It is important also to keep in mind that many diseases which formerly were considered as confined to one organ are seldom so limited, for numerous autop-

*The Causation of Disease, p. 20, by Harry Campbell, M.D., B.S. (Lond.), London, 1889.

sies have demonstrated beyond doubt that there are lesions of other organs that are just as definite as those of the part which once was quite generally considered to be the sole seat of origin. At the same time many of the lesions are of such a nature as to render it certain that they existed long before the onset of the fatal attack.

In considering therefore, the sum of those material conditions from which disease or diseases necessarily follow, our search must be directed to the material conditions out of which the disease or diseases may have arisen.

DISEASE CLASSIFICATION.

Dr. Meigs, Physician to the Pennsylvania Hospital,* has very clearly set forth the fact that many of the present disease classifications are faulty in that they do not follow any consistent principle. He also quite properly, I think, classifies all diseases as falling into one of two groups, those of extrinsic origin and those of intrinsic origin. He also brings out very clearly the fact that the diseases of extrinsic origin are generally those common to early life and are quite rare in old age. The diseases of extrinsic origin are smallpox, measles, whooping cough, diphtheria, etc. The diseases of intrinsic origin, on the other hand, are quite rare in early life and very common to old age. An illustration of this is cysts in the kidneys. There are, of course, a number of diseases which at the present time cannot be definitely assigned as being of extrinsic or intrinsic origin largely because such diseases are not at present thoroughly enough understood. It is also possible that some diseases may be of dual origin, that is, in part extrinsic and in part intrinsic. Cancer is probably such a disease.

Dr. Meigs has pointed out that if the subject of disease origin and causation is considered from the standpoint of pathology and the conditions of the tissues examined, the meaning of the assertion that youth and age may be mingled will be understood and it will be perceived that disease can so far change a person young in years as to produce all the conditions which under natural circumstances are found only in the old.

Recent advances in medical science and practice have developed a wider knowledge of the fact that persons affected with chronic diseases, such as certain chronic lung diseases, nephritis, etc., may have their lives prolonged for several years by proper curative treatment and personal care. The same truth is even more susceptible of demonstration in instances of chronic heart diseases. This fact has been brought out very clearly by Dr. Oliver T. Osborne in his little book entitled "Disturbances of the Heart; Discussion of the Treatment of the Heart in Its Various Disorders."†

With these preliminary statements we may ask the question, have the degenerative diseases increased? For the purposes of this discussion I am limiting the term degenerative diseases to include chronic valvular diseases of the heart, fatty degeneration of the heart, chronic myocarditis, chronic dilation of the heart, heart disease of rheumatic origin, certain types of nervous diseases such as apoplexy and chronic nephritis, or Bright's disease. For the purposes of this discussion it is not of prime importance to determine positively whether or not there has been an increase in the degenerative diseases, so-called. There are good reasons to believe that there have been exaggerated statements made as to the increase in this class or group of diseases and there are good reasons to believe from a very extended insurance mortality experience based upon millions of lives and hundreds of thousands of deaths that there has been no very considerable increase in the mor-

*The Origin of Disease, p. 9, by Arthur V. Meigs, M.D., Philadelphia, 1897.

†The American Medical Association, 1913.

tality from this group of diseases in recent years in this country.* Entirely aside, however, from that question there are numerous facts in mortality experience both general and special, in proof that there is at the present time a very large and probably preventable mortality at premature ages in this group of diseases. There are many difficulties in the way of determining whether or not there has been an increase in the mortality from these diseases, not the least of which is our imperfect nosology and the resulting imperfect and changing classification of diseases or causes of deaths as reported by the United States Census Bureau, State health authorities, etc. One illustration will suffice to bring out this fact. In the four States of Connecticut, Massachusetts, New Hampshire and Rhode Island, combined, in the period 1889 to 1891 and at ages 60-69, 2.6 per cent of the total mortality was assigned to the indefinite term "old age." In the period 1909-1911, same age group, the percentage was only 0.6. The similar comparison, ages 70 to 79, was 11 per cent for the earlier period as against 3.2 per cent for the later period. Again, the similar comparison for ages 80 and over gives 38 per cent for the earlier period as against 17.6 per cent for the later period. These facts illustrate the danger of drawing conclusions as to the increase of degenerative diseases on the basis of mortality returns of the registration area of the United States, much, if not all of which apparent increase is due to the change in titles and reassignments of causes, particularly in the comparatively recent period during which there has been anything like accurate or complete registration of deaths even in the registration area of the United States. After a very extended and careful investigation of the subject I cannot but conclude, as many other investigators have, that although there may have been an increase in the mortality from degenerative diseases in recent years, such increase has not been relatively important and, indeed, if the classification could be made with absolute accuracy, there is a strong probability that the increase has been very small and possibly *nil*.

For the present we can probably dismiss as of no practical value the much heralded, alleged discovery by Dr. Serge Voronoff. Judging from analogy and the consensus of opinion of the most able and experienced medical and surgical experts, there is no very strong probability that the fountain of youth will be found in an "interstitial" or any other gland or part of the human body. As "The Cincinnati Post" in an editorial of October 23, 1919, states: "While positive as to the restoration of vim, vigor, etc., Dr. Voronoff is careful to state that gray hair does not return to black, new teeth don't sprout and weak eyes do not become strong. White-headed, toothless and wrinkled, the old man is just filled chock full of youthful gaiety—everything in the way of youth except the looks." Apropos, it is interesting to note that Dr. W. J. Mayo is reported to have recently stated before the American College of Surgeons that some fifteen years have been added to the span of human life since the Civil War and he has predicted, according to report, that within a short period, or within twenty years, there are likely to be from ten to fifteen more years added to the span of human life in the United States. This addition to our years, however, according to Dr. Mayo, will be by the well-known methods of life conservation rather than by any such remarkable, alleged discoveries as that claimed by Dr. Voronoff.

Principal Causes of Premature Death from Degenerative Diseases. On the basis of the philosophical theories of Drs. Campbell, Meigs and others, which theories are at least partially confirmed by an enormous body of reliable experience, we may briefly enumerate some of the principal causes of these premature deaths as follows: Focal infections, in-

*See Appendix A.

cluding mouth infection; faulty habits, such as over-indulgence in alcohol, tobacco, sexual excesses, etc.; lack of exercise leading to constipation and other serious contributory causes of chronic affections; dietetic excesses, such as over-indulgence in food, undernourishment, malnutrition, unbalanced rations, etc.; overweight, physical and mental strain, etc.

It would be impossible to dwell at length upon any one or all of these and other causes in this brief paper; I will, therefore, confine myself to the one item, focal infections. Dr. W. J. Mayo is reported to have said before the recent Congress of the American College of Surgeons that, "Better care of focal infections in the earlier decades will prevent many deaths in later life." Of course, I assume that Dr. Mayo meant postpone instead of "prevent." It is a well known fact, which has recently received considerable emphasis, that good dentistry will prevent many serious diseases, some of which are likely to become chronic. In fact, Dr. W. J. Mayo in this same address is reported to have said that good dentistry has eliminated a percentage of cancers of the jaw due to the irritation of defective teeth. In this connection I may also mention the recently published industrial mortality experience of the Metropolitan Life Insurance Company in which it appears that there was a quite significant increase in organic heart disease, pulmonary tuberculosis and puerperal diseases during the recent epidemic period of influenza when the mortality experience of that company for the period October to December, 1918, is compared with the similar period for the year 1917.*

STATISTICS.

We need much more full and complete statistical information as to the effect of previous diseases and injuries on mortality. There is every prospect that such statistics will be available in large numbers in the near future. Industrial insurance companies, hospitals, employees benefit associations, experiments like the Framingham Health and Tuberculosis Demonstration and the Cincinnati Unit Plan, the statistics of school medical inspection and the statistical data which are being collected by the Life Extension Institute are instances, among others, of the possibilities and probabilities in this direction.

METHODS OF CONTROL OF DEGENERATIVE DISEASES.

I have nothing new to propose in the way of methods of controlling degenerative diseases. I believe that the methods which must be followed are practically all in use somewhere and to some extent at the present time. It is only a matter therefore, of coordinating and extending these methods on a more wide and practically universal scale, and if this is done, unquestionably a large proportion of the premature deaths from the so-called degenerative diseases will be postponed in many cases for several years. In fact I believe that the considerable reduction in industrial accidents which has already taken place; the reduction in infant mortality and in certain diseases of early childhood, particularly diphtheria; and the reduction of the mortality and morbidity from certain diseases of middle life, such as typhoid fever and pulmonary tuberculosis, are certain to reflect favorably upon the so-called degenerative diseases in the near future if such has not already been the case.

In conclusion, let me enumerate very briefly some of the principal methods which, in my opinion, will go a long way towards controlling the premature mortality from degenerative diseases if they are extended and correlated under some well-devised system of Federal and State Health Administration such as has recently been put into effect in Great

*Influenza Mortality Among Wage-Earners and Their Families, by Frankel and Dublin, Amer. Jour. Pub. H., October, 1919.

Britain and Canada, through the establishment of Ministries of Health:

1. An extension of the most scientific methods of infant care and medical supervision.

2. An extension of the most scientific methods of care and supervision of children of pre-school age.

3. An extension of school hygiene, in which shall be included medical inspection and physical training of children in the grade schools, high schools and institutions of higher learning. This also includes provision for school lunches wherever there is need for the same.

4. A continued and even more intensive and wide-spread scientific educational propaganda in the principles of good personal habits, including cleanliness, diet, exercise, proper recreation, etc. This education should also include instruction in the principles of personal safety and of industrial, public, and home accident prevention. The need for periodical dental and other physical examination should be a part of such propaganda.

5. An extension of the work, now so well done in many large industrial plants, of industrial sanitation. This should include factory good housekeeping, which in turn includes cleanliness, good lighting, good ventilation, the elimination so far as possible of dusts, fumes, gases, industrial poisons, etc.

6. Industrial hygiene. A very considerable emphasis has been placed upon this factor in recent years. The principles have already been worked out quite satisfactorily in some countries and in many plants and establishments in this country. The factors in industrial hygiene are numerous. Undue fatigue should be avoided; there should be provision for physical examinations of employees and for industrial clinics; recreational facilities should be made available to employees wherever possible and industrial cafeterias have been found of inestimable value in certain plants where good eating facilities are otherwise difficult to obtain.

I have not attempted to cover this subject with any completeness; that, would be utterly impossible in so brief a paper. I have only attempted to open the subject and trust that it will receive amplification from the discussions that may follow.

There are added to the paper a few illustrative statistics and a brief bibliography of some of the more important recent books and pamphlets dealing with this large problem.

APPENDIX A

Mortality from Degenerative Diseases Ages 40 and Above*
Industrial Mortality Experience
The Prudential Insurance Company of America
1911-1918

Years	Approximate Number Persons Exposed to Risk, Ages 40 and Over	Number of Deaths	Death Rate Per 10,000 Persons
1911	1,690,902	16,377	96.85
1912	1,807,395	17,079	94.50
1913	1,944,160	18,103	93.11
1914	2,046,162	18,793	91.85
1915	2,182,878	21,878	100.23
1916	2,336,044	23,966	102.56
1917	2,484,131	25,349	102.04
1918	2,712,165	25,058	92.39

The statistics of the Metropolitan Life Insurance Company's experience may be found in "Mortality Statistics of Insured Wage-Earners and Their Families." The data, however, are not given by age in such manner as to make possible a comparison of 1911 with 1917. The death rates from Organic Heart Diseases, Apoplexy and Cerebral Hemorrhage, Diabetes and Bright's Disease combined, all ages and both sexes, were as follows:

Death Rate Per 10,000 Persons Insured All Ages
Degenerative Diseases
Metropolitan's Industrial Experience

1911	31.43	1915	31.60
1912	32.72	1916	32.38
1913	31.77	1917	31.98
1914	31.69		

In these two mortality experiences, which represent several millions of lives exposed to risk, there is no conclusive evidence that the so-called degenerative diseases have increased in prevalence or fatality in recent years in the United States.

*Including Organic Heart Disease, Apoplexy and Cerebral Hemorrhage, Diabetes and Bright's Disease.

APPENDIX B

A Partial Bibliography

The Causation of Disease. Harry Campbell, M.D., B.S., (Lond.), London, 1889.

The Origin of Disease. Arthur V. Meigs, M.D. Philadelphia, 1897.

American Life-Waste, Where and How It Is Increasing. E. E. Rittenhouse, President, Provident Savings Life Assurance Society. New York, 1910.

Circulatory Disease: Its Prevalence in New England, Massachussets and Boston. Edwin Welles Dwight, M.D. Boston, Mass., June 13, 1911.

The Upward Trend of Mortality in Middle Life and Old Age. E. E. Rittenhouse. American Association for the Advancement of Science, January 3, 1913.

The Increase in the National Death Rate from Heart Disease, Bright's Disease and Apoplexy. George H. Cunningham. February, 1913.

The Increasing Mortality from Degenerate Maladies. E. E. Rittenhouse. The Popular Science Monthly, April, 1913.

Possibilities of Reducing Mortality at the Higher Age Groups. Louis I. Dublin, Ph.D., September, 1913. Metropolitan Life Insurance Company, New York, 1913.

Disturbances of the Heart. Oliver T. Osborne, M.D. Chicago, Ill., 1913.

What Heart Patients Should Know and Do. James Henry Honan, M.D. New York, 1913.

The Significance of a Declining Death Rate. Frederick L. Hoffman, LL.D. Prudential Press, Newark, N. J., 1914.

Periodic Examination of Supposedly Well Persons. Eugene Lyman Fisk, M.D. Life Extension Institute, New York, 1915.

Health Conservation After Forty. John L. Davis, M.D. Texas State Journal of Medicine, January, 1916.

Increasing Mortality in the United States from Diseases of the Heart, Blood-vessels, and Kidneys. Eugene Lyman Fisk, M.D. New York Medical Journal, January 15, 1916.

Geriatrics: The Diseases of Old Age and Their Treatment. I. L. Nascher, M. D. Philadelphia, Pa., 1916.

Chronic Diseases of the Heart, Kidneys and Arteries from the Standpoint of Etiology, Prevalence, Mortality and Prevention. Charles F. Bolduan, M.D. New York, 1916.

Risks of Middle Age. Report of Committee Concerning Causes of Death and Invalidity in the Commonwealth of Australia. Melbourne, 1916.

The Classification and Relations of Cardio-Vascular-Renal Disease. Lewellys F. Barker, M.D. Southern Medical Journal, January, 1917.

Disturbances of the Kidneys. Oliver T. Osborne, M.D. Chicago, Ill., 1917.

The Road to a Healthy Old Age. T. Bodley Scott, M.D. London, 1917.

The Increasing Mortality After Age Forty-Five — Some Causes and Explanations. Louis I. Dublin, Ph.D. Quarterly Publications of American Statistical Association, Boston, Mass., March, 1917.

Civilization and the Diseases of Adult Life. Edward O. Otis, M.D. Medical Record, July 28, 1917.

The Causes of Disease. Ernest S. Reynolds, M.D. (Lond.), F.R.C.P. The Lancet, November 10, 1917.

Evidences of Full Maturity and Early Decline. J. Madison Taylor, M.D. The Scientific Monthly, February, 1918.

Diseases of the Cardio-Vascular System. Eugene Lyman Fisk, M.D. Texas Medical Journal, February, 1918.

Physical Training in Public Schools as an Aid and Remedy for the Physical Defects Found Through the Draft. Thomas A. Storey, M.D. February 19, 1918. The Military Training Commission, Albany, N. Y., 1919.

The Mortality from Degenerative Diseases. Frederick L. Hoffman, LL.D. Journal of the American Institute of Homeopathy, March, 1918.

State Legislation for Physical Training. Thomas A. Storey, M.D., June, 1918. The Military Training Commission Albany, N. Y., 1919.

Is It Worth While for the Man of Fifty to Get into Physical Condition? Conservation of Man Power at or Beyond Full Maturity. J. Madison Taylor, M.D. Boston Medical and Surgical Journal, September 5, 1918.

The Relation of Habits to Life Expectancy. J. H. Kellogg, M.D. Good Health, Battle Creek, Mich., December, 1918.

The Evolution of Disease. Sir W. Arbuthnot Lane, Bart., M.S., F.R.C.S. The Lancet, December 20, 1919.

Physical Training an Essential to the Better Health Defense of Society. Thomas A. Storey, M.D. The Military Training Commission, Albany, N. Y., 1919.

The Growing Movement to Prolong Human Life. Life Extension Institute, New York, 1919.

Prolonging Life as a Function of Life Insurance. Life Extension Institute, New York, 1919.

How to Live. Irving Fisher and Eugene Lyman Fisk, M.D. New York and London, 1919.

Mortality Statistics of Insured Wage-Earners and Their Families. Louis I. Dublin, Ph.D., E. W. Kopf, and G. H. Van Buren. Metropolitan Life Insurance Company, New York, 1919.

Geriatrics: A Treatise on Senile Conditions, Diseases of Advanced Life, and Care of the Aged. Malford W. Thewlis, M.D. St. Louis, Mo., 1919.

A Plan for a More Effective Federal and State Health Administration. Frederick L. Hoffman, LL.D. Prudential Press, Newark, N. J., 1919.

Physical Examination of the First Million Draft Recruits; Methods and Results. Compiled under direction of the Surgeon General, M. W. Ireland, Maj.-General, M.C., U.S.A. Love and Davenport. Government Printing Office, Washington, D. C., 1919.

STUDIES ON MALARIA CONTROL

X. Cure of Infected Persons as a Factor in Malarial Control*

C. C. Bass, M.D.,

Department of Experimental Medicine, Tulane Medical College, New Orleans, La.

Read at General Sessions, American Public Health Association, at New Orleans, La., October 29, 1919.

Nine-tenths of the malaria would be gone in ten years if the doctors could only cure all the cases they treat. Intensive survey and follow-up can effect like results. This is no idle story, for in Sunflower County, Miss., in 1918, malaria was reduced ninety percent.

THE only source of malaria to man is infected anopheline mosquitoes. The only source of malaria to mosquitos is infected man. The greater the number of infected mosquitoes in a given region, the greater the probability of people who live in the region becoming infected. Likewise, the greater the number of infected people living in a given region, the greater the probability of mosquitoes in the region becoming infected.

The number of infected mosquitoes in a given region may be reduced either by reducing the total number of mosquitoes susceptible or exposed to infection or by reducing the number of infected persons — potential sources of infection—who are exposed to the bites of mosquitoes.

The number of mosquitoes in a given region may be reduced by various methods of mosquito control, all depending, however, chiefly or entirely upon elimination, reduction or treatment of breeding places. It is possible to do this thoroughly enough to entirely prevent the transmission of malaria. This is possible because, fortunately, the length of life of anophelines during the warm season, during which malaria is transmitted chiefly, is quite short.

Use of screens and other means of protecting the people from the bites of mosquitoes also reduces the number of infected mosquitoes in a region by reducing the chances of mosquitoes biting infected individuals and getting infected. They also reduce the chances of transmission by infected mosquitoes by protecting uninfected persons from their bites.

Disinfecting or curing infected persons also reduces the number of infected persons—the only source of infection of mosquitoes—in a given region to whatever extent it is carried out. Theoretically, it would be possible to prevent completely the transmission of malaria and to eliminate it from a given region by curing or disinfecting all infected persons in the region. This would result, regardless of the abundance of

*This is one of a series of papers to be published, based largely or entirely upon malaria control work conducted jointly by the International Health Board and the Mississippi State Board of Health. The author, however, is alone responsible for the views expressed.

I. Appeared in the Southern Medical Journal, Vol. XII, No. 8, p. 456.
II. Journal A.M.A., Vol. 72, No. 17, p. 1218.
III. Southern Medical Journal, Vol. XII, No. 4, p. 190.
IV. Will appear shortly in the Osler Memorial Volume, Paul B. Hoeber, New York, publisher.
V. Southern Medical Journal, Vol. XII, No. 6, p. 306.
VI. Southern Medical Journal, Vol. XII, No. 8, p. 460.
VII. Southern Medical Journal, Vol. XII, No. 8, p. 462.
VIII. Southern Medical Journal, Vol. XII, No. 8, p. 465.
IX. Journal A.M.A., Vol. 73, No. 1, p. 21.

mosquitoes, provided all infected persons could be treated and disinfected. The reduction both in prevalence and transmission will be in proportion to the proportion of the infected persons disinfected. This statement applies alike to small areas, larger areas or the entire malarial section of the country. Malaria could be eliminated from the entire United States by disinfecting all infected persons in the country.

It will be convenient to discuss this phase of the subject under three heads:

I. CURE OF CASES TREATED BY PHYSICIANS.

The proportion of the total number of persons who have malaria, who are treated by physicians, varies no doubt considerably in different localities. We have no extensive data indicating what proportion of the total amount of malaria is treated by physicians. By taking the number of cases of malaria reported to the State Board of Health by the physicians of Bolivar and Sunflower Counties, Miss., which are supposed to be representative of the malarial region of the Mississippi Delta, and data obtained by intensive malaria surveys of some 40,000 persons during 1916, 1917 and 1918 in these counties, we have been able to arrive at fairly definite conclusions as to the proportion of the total amount of malaria, that is treated by the physicians in this particular region. These data indicate that approximately 20 to 25 per cent of the total number of persons infected with malaria are treated by physicians. Having this information, we may calculate the rate of reduction in the prevalence and transmission of malaria that would occur if all physicians disinfected all of their cases.

It is perhaps not generally appreciated but it is nevertheless a fact that only a small percent of the cases of malaria treated by physicians are actually disinfected. It is true that most of them are relieved of their clinical symptoms temporarily, but proper treatment is not continued for sufficient length of time to disinfect them. They relapse from time to time. Many individuals carry their infection for an entire year or even longer, during all of which time they are potential sources of infection. A recent analysis* of data obtained in a study of malaria in Sunflower County indicates that between 50.77 per cent and 68.86 per cent of all persons who have attacks of malaria during a given year have relapses and not new infections. This serves to emphasize the great frequency of relapse resulting from insufficient treatment.

Generally, when a physician is called to treat a case of malaria, if proper diagnosis is made the patient is put on treatment with the specific remedy, quinin in some form or other, and the clinical symptoms are relieved in comparatively short time. Soon afterward the patient feels well, and no practical method of examination will determine whether he has been disinfected or not. As a rule, he has not, and if treatment is discontinued, sooner or later relapse occurs. During much of the time in the interval between attacks he has malaria parasites in his blood and may infect mosquitoes and thereby be a source of transmission to others.

Following the relief of clinical symptoms, the practice among many physicians is to prescribe some tonic containing more or less quinin but seldom sufficient to disinfect the patient. In some instances sufficiently large doses may be advised to actually disinfect and the advice to keep it up long enough to do so is given. However, it is usually done in such a way as not to impress the patient with the importance of carrying it out. As a result, he neglects or stops treatment long before he is disinfected.

In other instances, the treatment advised to follow the acute attack is so unpleasant, produces so much discom-

*C. C. Bass. The Frequency of Malaria Relapse in an Area of Great Prevalence in the Mississippi Delta. Osler Anniversary Volume, Paul B. Hoeber, New York, publisher.

fort or causes so much inconvenience that the patient does not carry it out, resulting in failure to disinfect.

One of the reasons for the failure to disinfect patients treated by physicians is the lack of a standard, effective method of treatment. Different authorities advocate different methods of treatment, many of them impractical, to say the least. The physician who is actually anxious to find and employ the best treatment is unable to know which is best because of the great variety of methods advocated by different authorities. The more spectacular methods are more likely to be employed and they are much less likely to be practical or effective. In fact, most of them are very impractical from the standpoint of disinfecting infected persons. These facts serve to emphasize the very great need of some standard, practical method of treating and disinfecting persons who have malaria. The standard treatment adopted in the Bolivar and Sunflower Counties work* consists of a proper dose of quinin every night before retiring for a period of eight weeks. The proper dose for different ages is: under one year, ½ grain; one year, 1 grain; two years, 2 grains, three and four years, 3 grains; five, six and seven years, 4 grains; eight, nine and ten years, 6 grains; eleven, twelve, thirteen and fourteen years, 8 grains; fifteen years and older, 10 grains. This treatment appears to disinfect more than 90 per cent of cases and the writer's opinion is that it is the most practical method for this purpose.

If we assume that 20 per cent of the malaria that occurs each year in a given region is treated by physicians, we can estimate the rate of reduction in the prevalence of malaria that would result if all physicians disinfected all the cases they treat, a thing that is quite practical and that should be done. (Chart 1.) There would be a reduction of 20 per cent during the first year and 20 per cent of the remainder during the second year, etc., until finally by the end of a period of ten years there would be a reduction of approximately 90 per cent

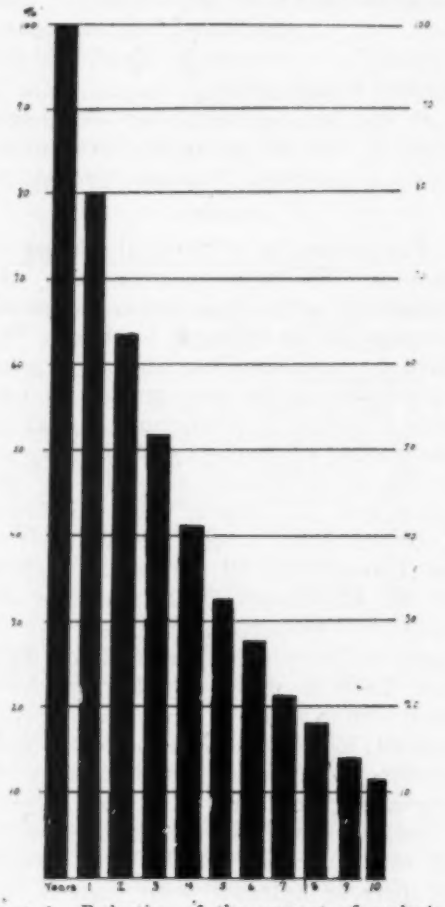


Chart 1.—Reduction of the amount of malaria that would result from disinfection of all cases treated by physicians.

in the prevalence of the disease over what existed at first.

These figures represent the contribution the medical profession could make to the control of malaria if they would do so. This is perhaps the avenue of approach of the great problem of malaria control through which results can be accomplished with less expenditure of money and effort than any other. If

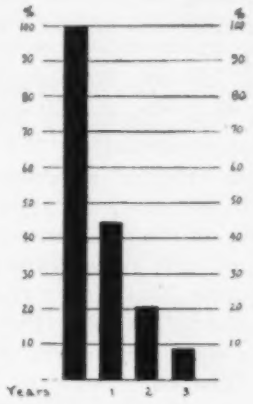
*C. C. Bass. The Treatment of Malaria, with the Special Object of Disinfecting Infected Persons, Adopted After Wide Experience in Malaria Control by Treating Malaria Carriers in the Mississippi Delta. Journal A.M.A., Vol. 72, No. 17, p. 1218.

we can settle upon some standard method of treatment and in some way bring it impressively to the attention of the medical profession, it will be adopted to a considerable extent, at least, and to whatever extent this is done, to that same extent malaria will be controlled throughout the entire country. It may be of interest to state that the State Boards of Health of Mississippi and Louisiana have taken some steps in this direction. They have called to the attention of the medical profession of their respective states the method of treatment which has been adopted as standard as a result of the malaria control work in Bolivar and Sunflower Counties in Mississippi. It is impossible to say to what extent this method of treatment is being employed by the medical profession of these states, but there is information that it is being done to considerable extent, at least.

II. Cure of Persons Who Treat Themselves.

In an analysis of the data obtained by an intensive survey of 31,459 persons in Bolivar County, Miss., during 1916 and 1917,* it was found that of the total number of persons in whose blood malaria parasites were found present, only 55.09 per cent gave a history of having had one or more attacks of malaria during the previous twelve months and that 44.91 per cent had not had attacks that were recognized either by physicians or by themselves as being due to malaria. This indicates, therefore, that approximately 55 per cent of the total number of persons infected with malaria, in this locality at least, know that they have malaria and are treated either by physicians or by themselves. If all persons who know they have malaria and treat themselves should employ a method of treatment which disinfects them—and if those who are treated by physicians are treated so as to disinfect them, we would have, therefore, theoretically 55 per cent of reduction in the prevalence of malaria each year. There would be at the end of the first year only 45 per cent as much malaria as otherwise. At the end of the second year there would be 20.25 per cent and at the end of the third year 9.11 per cent. (Chart 2.)

Chart 2. Reduction in the prevalence of malaria that would result from the cure of all recognized cases, both those who are treated by physicians and those who treat themselves.



The layman who undertakes to treat himself for malaria buys either quinin in some form or other or perhaps more likely some one of the many chill tonics and patent medicines containing quinin. He is usually relieved in a short time and so far as he knows there is no necessity to continue treatment. The treatment is discontinued and in due course of time, perhaps a few days, weeks, months or even a year afterwards he relapses, carrying the infection all the time. During part of the time at least he has enough malaria parasites in his circulating blood to infect mosquitoes. He has not been informed and does not realize the importance of disinfection and even if he did he is unable to select a suitable method of treatment from those available to him.

Public health agencies can contribute very largely to malaria control by bringing the proper treatment and the importance of disinfection to the attention

*C. C. Bass. The Frequency of Malaria Infection Without Recognized Attacks, in an Area of Great Prevalence. Southern Medical Journal, Vol. XII, No. 8, p. 466.

of the public who treat themselves for malaria, by publicity, by advocating a suitable standard treatment and by making such standard treatment available at reasonable cost to those who have malaria. Proper standard treatment for malaria should be sold at all stores of the country where medicine is sold. It should be just as available to people who have malaria as are the much less effective chill tonics, etc. This very thing is being done in Sunflower County, Mississippi, during the present year (1919) under the direction of the State Board of Health.

III. CURE OF PERSONS WHO ARE INFECTED BUT HAVE NO RECOGNIZED CLINICAL SYMPTOMS.

The data referred to above indicate that 44.91 per cent, or approximately 45 per cent of the total number of persons infected with malaria have no clinical symptoms that are recognized as due to malaria. Neither they nor the physicians who treat them know that they are infected. Some of them, no doubt, later on develop clinical symptoms of the disease and are then recognized, but many finally lose their infection without ever having recognized clinical symptoms of malaria. The only way that they may be found is by microscopic examination of the blood and even that does not find all of them. At times there are very few parasites in the blood, but at other times there are sufficient to infect mosquitoes and thereby to be a source of infection to others. Such persons are potential sources of infection at all times. The only way by which all persons who have malaria in a given locality can be found is by intensive malaria surveys. The history of previous attacks must be taken and those who give histories of having had one or more attacks during the previous twelve months should be considered probably still infected and therefore should take the necessary treatment to disinfect them. A proper blood examination should be made of those who give negative histories and those who are found to have parasites should also be disinfected. Theoretically, it would be possible to eradicate malaria entirely from a given region in this way. Unfortunately, it is not possible to find 100 per cent of infected persons by present methods and treatment necessary to disinfect 100 per cent is not very practical. It is possible, however, to disinfect a very high per cent, considerably more than 90 per cent, with treatment that is not impractical.

During 1916 and 1917 experiments in malaria control were conducted in Bolivar County, Miss., under the auspices of the Mississippi State Board of Health, as a result of which, a suitable method of treatment and methods of carrying out this more or less intensive method of malaria control were developed. During 1918, the most promising method of control by disinfecting infected persons was carried out in an area of 100 square miles, containing a population of approximately 9,000, in Sunflower County. The reduction in the prevalence of the disease in this area indicated by the cases treated

CONTROL OF MALARIA IN SUNFLOWER COUNTY, MISSISSIPPI BY CURING INFECTED PERSONS.

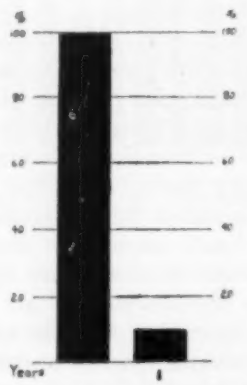


Chart 3. Reduction in prevalence of malaria in a 100 square mile area in Sunflower County, Mississippi, 1918, following intensive malaria control work in 1918. (The tall column represents the total number of persons who had attacks of malaria during the 12 months previous to the first survey and treatment and the short column the total number who had attacks during the 12 months following.)

by the physicians was 88.82 per cent. The reduction indicated by a resurvey of a large part of the area just one year from the first survey was 89.9 per cent. (Chart 3.) In other words, during the 12 months following the survey and treatment of all infected persons, there occurred only 10.1 per cent as much malaria as occurred during the 12 months previous to the survey and treatment.

SUMMARY.

1. Cure of infected persons is an important factor in control of malaria. Its usefulness depends upon the extent to which it is carried out.

2. If the physicians of the country would cure all the cases of malaria they treat, this alone would result in a reduction of approximately 90 per cent in the prevalence of the disease in a period of ten years.

3. If all persons who treat themselves for malaria, as well as those who are treated by physicians, took proper treatment and were disinfected, this would result in a reduction of 90.89 per cent in the prevalence of the disease in three years.

4. By proper intensive survey and treatment it is theoretically possible to eradicate malaria entirely from any given region. A reduction of 89.9 per cent followed carrying out this method in an area of 100 square miles in Sunflower County, in 1918.

□

A STANDARD BUDGET; THE HEALTH OFFICER'S FIRST NEED

HAVEN EMERSON, M.D.,

Medical Adviser, Charity Organization Society, New York City.

Read before Section of Public Health Administration, American Public Health Association, at New Orleans, La., October, 28, 1919.

"Budget hearings are a public forum," writes Dr. Emerson, "and preparation of the budget commits the health officer to measure his own with his neighbors' work." These are wise words from a health officer of experience in a great city, who writes for the benefit of brother officers.

WHAT is a budget and what is the Health Officer's first need? Then let us see if the title of the paper can be justified. A budget is a necessary instrument of administration. A budget is a report, an estimate and a proposal. It is a document of information. It is not a budgetary system but is indispensable for such a system. The health officer's greatest need is public knowledge of the service he can render, and public interest in supporting his request for appropriations.

If a budget is intelligible, logical, giving as a background an accurate history of service, and costs, and offering comparison on equivalent basis in the same terms with service and costs in other similar communities, the support of business, labor, social and general citizen groups can be readily enlisted.

A budget is in its perfection a triple

annual report giving on parallel sheets certain data for the last completed year, for the current year up to date of report and proposals for the next full fiscal year.

Briefly a budgetary system requires submission of a report of past work, expenses and income, and a program and plan for work and expenses, for consideration by the chief executive who then calls upon the legislative or appropriating body for an act of appropriation which amounts to an order or authorization to carry out the program approved.

For the health officer this means submitting to the Governor or Mayor or some reviewing body his document of information, which commits him to a program and an organization to perform the functions for which his department or bureau was created. In making such a statement he assumes responsibility as he should for the wisdom of the entire plan and organization.

In justifying his plan of work, in argument for his organization, and in pleading for the funds he requires, he will be chiefly helped by comparable statements in previous budgets for his own area and by reference to budgets of other health officers, administering similar areas.

The health officer's first need is to have his own statements comparable for a series of years, and the next need is to have his fellow officers agree in following identical methods of report.

The agreement need not be 100 per cent or take place all at once, but a beginning can be made in this as in standard methods for water, milk or air analysis.

If there is nothing more than an agreement to report work, plan, organization and costs according to a few relatively simple functions, such as registration of births, morbidity and deaths, control of communicable diseases, infant hygiene, school medical inspection, sanitation, food control, a gain would be apparent, for this would result in the keeping of accounts by functions or objects of work, the auditing of accounts on the same lines, and the description of organization with direct relation to function.

The health officer being responsible for but one of the administrative divisions of civil government the chief executive or his representatives must judge and balance the needs of the public for the increase of services which the health officer clamors for, against the tax or other incomes he can count upon and the requests of other departments. Health development and protection depend on so many services that often the appropriation for parks, sewers, tenement houses and hospitals provided for in other budgets will permit of reduction in the health officer's requests.

The helpful tax payer must have it made easy for him to support his best friend the health officer by having costs and results reported by function, service or organization unit. In this way each interested group or individual can see what share of his tax dollar goes to fill the need he particularly feels.

Costs of functions or organization units must be reported according to the three main usual business subdivisions, Capital Outlay, Fixed Charges, Current Expenses as well as having services, transportation, materials and other objects of expense listed under each function.

Analysis of relative values stares one in the face when such logical elements for study are presented.

In order to present the problem and support the claims for public funds a health officer must show the object or thing purchased, the character of expenditure, the function served, the organization responsible for the function and the fund chargeable. Organization represents in the main the functions served.

Thus the budget and appropriation act should reveal the complete organization.

Whatever aids or encourages an interest in people in the character, quality and costs of the functions of government will contribute to practical democracy, and few opportunities occur so favorable to this kind of education as the public hearings on budgetary requests by department heads where a budgetary system is in effect. Such opportunities are a great satisfaction to the health officer and to the citizen.

Unless the health officer and other administrative heads take the lead and establish the practice of itemized budgetary reports, the present tendency of legislatures to assume executive functions will be accentuated to the detriment of orderly public service.

Preparation of a budget commits the health officer to study the history of his department, to think ahead and measure his own with his neighbors' work. None of this can he do with profit until there is agreement as to certain elementary forms and contents of reports.

Budgetary hearings are a public forum. Here the health officer can show the superior claim of the kind of insurance he has to sell as compared with the insurance against property loss which most of the rest of public funds are spent for.

Appeals of Health Officers direct to legislatures are not free from political entanglements. The health officer should present his budgetary report to his chief executive whose function it is to call for legislation to supply funds.

More than two thirds of the states have passed or are preparing enabling legislation to permit of the introduction of budgetary systems and a call for annual departmental budgets.

In Wisconsin there is an admirable system in effect but unfortunately the budget sheets called for from the State Health Officer do not provide for data by functions or by organization, and the facts of past service and proposals for future activities can not readily be extracted for comparison.

Budgetary systems are coming. Uniformity is indispensable. Health officers should specify their own needs and express themselves as a body. Without a budget the health officer's requests are likely to lack responsible revision and approval by the executive. Without a budget the health officer is likely to see legislative bodies controlling administrative organization for performing technical health functions. Without a budgetary report the health officer is without any formal public opportunity to defend his requests and explain his plans so that those whom he serves may know, understand and support him.

One of the important services which this section could do for Health Administration on this continent would be to encourage, by the example of its members, the introduction of budgetary systems and standard budget reports.

□

Investigations on Influenza.—Through the aid of a grant provided by the Metropolitan Life Insurance Company, a commission has been appointed to conduct studies on influenza. The Commission consists of Dr. G. W. McCoy, Dr. W. H. Park, Dr. Lee K. Frankel, Dr. A. S. Knight, Dr. M. J. Rosenau, Dr. E. O. Jordan and Dr. W. H. Frost. The work will be conducted in Washington, New York, Boston and Chicago. The purpose of the investigation is to study the cause, mode of spread and treatment of influenza and its complications. Studies are being made on the prophylactic value of vaccines against influenza, common colds and pneumonia. Work is also being done aiming to determine the cause of these infections and a special study is being made of the bacterial flora of the upper respiratory tract in health and disease. Special attention is given to the possibility of a filterable virus being the cause of these infections. Science, December 5, 1919.—(*M. P. H.*)

VITAL STATISTICS IN CANADA

R. H. Coats,

Dominion Statistician,
Ottawa, Ont.

Read before Section on Vital Statistics, American Public Health Association, at New Orleans, La., October 28, 1919.

Canada for the first time has undertaken a comprehensive survey in vital statistics, and this paper is a report of progress. It is proposed to make monthly compilations, prepare annual reports, collate statistics of immigration and emigration and supply standard forms for collection and record.

IN this short paper and before the present audience, it is unnecessary to point the need in every country of a comprehensive scheme of vital statistics, so framed that results may be collated and compared not only as between place and place but with those of similar geographical entities in other countries. In Canada we are now for the first time, thanks to the excellent co-operation of Provincial registrars-general and public health officials, in a fair way to meet this necessity, and a brief report of progress may be of general interest.

Legislative authority in Canada, it will be remembered, is delimited as between the Dominion and the Provinces by the British North America Act, 1867. Under this instrument, "property and civil rights" fall within the jurisdiction of the provinces. As vital statistics are widely used in the transfer of property and in the establishment of civil rights in general, they have been held to lie under provincial control, and in point of fact each of the nine provinces has for some time had legislation on the subject.

Concurrently, however, the Dominion government was assigned the duty of taking the census, and was given charge of statistics in general. Now the census, as the great stock-taking of the population, has a well-defined part to play in vital statistics. The Canadian census office was, however, given more even than the usual stock-taking role: in the original census act the office was instructed to collect also a record of all persons deceased within the census year, aside and apart from the enumeration of the living. Furthermore, in a general statistical clause, the Dominion government took express power to co-ordinate the vital statistics collected annually by provincial or other agencies. In outlining the past history of vital statistics in Canada, we may first glance at the activities of the Dominion under these provisions.

With regard to the collection of data concerning deaths in the census year, an attempt to comply with this instruction has been made in every census since confederation. The results, however, have not been happy. It is a fundamental rule of census-taking not to ask questions involving the extensive use of memory or of scientific knowledge. In experience, it was found that 20 per cent of the deaths were missed as the result of migration of population, lapse of memory or lack of knowledge in the person supplying the information, or through imperfect qualifications in the enumerator. Moreover, the information actually obtained was unsatisfactory, especially in the all-important matter of the cause of death. Even had the results been otherwise, mortality statistics at ten-year intervals are of little value.

Again, birth rates and marriage rates are needed only less insistently than death rates. The Dominion government last year revised its entire statistical system, greatly amplifying its range and centralizing the work in the Dominion Bureau of Statistics. In revising legislation to this end, it was resolved to discontinue altogether the provision for the decennial mortuary census, in which respect we were but following the lead of the United States, France, Germany and other countries, fortified by our own experience.

Coming to the second duty enjoined upon the census, that of co-ordinating the vital statistics annually available through provincial or municipal records, the Dominion has found it equally impossible hitherto to achieve satisfactory results. The reason lies in the provincial situation. One province has no vital statistics at all. In the others, legislation and methods have differed in the widest way. For example, the statistical year was not uniform, the International Classification of Causes of Death was not universally followed, and each province had its own formulæ for the compilation and presentation of the statistics. Taking the highly important matter of the form of death certificate as an example: of the 24 items which such a certificate usually covers, two of the provinces omitted 16, another 15 and another 13, whilst the least number of omissions was 3. Moreover, standards of administration have differed as between province and province and from time to time in the same province. Accordingly, though the Dominion has made an annual practice of bringing together for publication the more recent provincial vital statistics, we have always prefaced the figures with a note that they must not be made the basis of any calculation of mean birth or death-rate.

It may be interjected here that more than a quarter of a century ago, during the years 1883 to 1891, the Dominion government operated a scheme of annual mortuary statistics for cities of 25,000 and over by direct arrangement with the municipalities. This work, however, was abandoned when the provincial bureaus of vital statistics came into being. Its passing was marked by a significant incident, namely, a conference of Dominion and Provincial officials, held in 1893, which passed a resolution calling on the provincial and federal authorities to co-operate in the work of collecting, compiling and publishing the vital statistics of the Dominion.

It is on the principle laid down in this resolution that we have now at last attacked the problem of nation-wide vital statistics for Canada. The creation of the Dominion Bureau of Statistics above adverted to and the general statistical reorganization which was planned as a result may be said to have provided the primary motive-power. Though the initial step was taken by the Dominion bureau, the scheme, as already remarked, has owed its success throughout to the cordial good will and active practical assistance of the provincial authorities on whom devolves the crucial parts of its execution.

Briefly, the plan suggested was that each province bring its legislation and administration to a standard to be agreed upon, the bureau to act as intermediary for the maintenance of the standard and to furnish machinery for the compilation on a uniform basis of the resulting statistics. The bureau also undertook to secure all necessary supplementary data through the decennial census and to co-ordinate the statistics of migration with the scheme. It was not intended, of course, by the above that any province must cast its system in an iron mold or surrender individuality; the standard is a minimum standard, pure and simple.

In laying this proposal before the provinces, a memorandum was in the first instance drawn up for private discussion, including a model provincial bill, model forms of registration and model regulations for procedure in de-

tail, the whole based on thorough examination of vital statistical legislation and administration both in the provinces and in other countries. By June, 1918, sufficient progress had been made to warrant the calling of a formal conference. In addition to the provincial officials who, with the representatives of the Dominion bureau, constituted the principals in the negotiations, there were also invited representatives of such bodies as the Department of Insurance, the Dominion Pensions Board, the Commission of Conservation and the Canadian Medical Association. The American Society of Actuaries kindly consented to send a committee, and the Union of Canadian Municipalities and the Municipal Improvement League of Canada furnished delegates. Finally, we were fortunate enough to obtain the attendance of Dr. W. H. Davis, the chief of the vital statistical division of the United States Bureau of the Census. The main business of the conference consisted of a detailed examination of the proposed model bill and of the forms appertaining thereto. Resolutions were passed approving the policy of co-operation and centralization suggested and generally defining its scope. The model bill was sent on to a committee which duly met and completed its revision. If any one is interested in the details of the conference, I may say that an official report containing the agenda, resolutions, model bill and schedules was published and may be had from the Dominion Bureau of Statistics, Ottawa.

Machinery of this character is necessarily somewhat slow in setting up. During the year that has elapsed five of the provinces have passed the required legislation and have adopted the reforms, and three others will take action this year. Simultaneously the Dominion has defined its obligations by formal order. Briefly, these are as follows: (1) To furnish free of charge all forms required in the collecting of vital statistics; (2) to effect all compilations monthly according to a plan agreed upon; (3) to pay the cost of transcribing the forms required for compilation; (4) to make annual publication of the vital statistics of the whole of Canada, according to a plan to be agreed upon; (5) to meet the expenses of periodical conferences of provincial officials for the discussion of working methods; (6) after each decennial revision of the International Classification of Diseases and Causes of Death, to have prepared a Manual of the International list and if necessary to have the same approved by the Canadian Medical Council; (7) to prepare and supply free of charge to provincial registrars for distribution to physicians a pocket reference book to the international list of the causes of death; and (8) to collate the statistics of immigration and emigration with vital statistics, and to take the decennial and quinquennial censuses after approved methods, so that Canada will possess a complete, co-ordinated scheme of demographic statistics, including the day-to-day records of change and periodical stocktaking. The foregoing, of course, applies only to the provinces which furnish satisfactory evidence that they receive returns of at least 90 per cent of all births, marriages and deaths occurring in the calendar year.

It is hoped that with the beginning of 1920 these plans will go into operation, though another year may be required to bring everyone into the scheme, and though results for a time may leave something to be desired in the way of comprehensiveness. It may be added that a divorce bill recently before the Canadian Parliament opens the way to including the statistics of divorce within the scheme. We hope that throughout our policy we have kept the best traditions of vital statistics elsewhere in view, so that when we attain to final running order, and when some eighteen months hence we publish the first Canadian report relating to births, marriages and deaths, our work will be found not merely Canadian but general in interest.

AFRICAN ABORIGINAL THERAPY

PHILIP A. E. SHEPPARD, M.D.,

Boston.

No other man in America has so complete a knowledge of the aborigines of South Africa as Dr. Sheppard. For twenty-one years he spent his vacations in their kraals. He is a blood-brother in two tribes, and a chief, and sits on his own mat at tribal councils. His picture of their aboriginal therapy is unique.

AT the very outset we may say that apart from a few safe and sane measures practiced by the native tribes of southern Africa, everything is in the hands of the unconstitutional "Medicine Man" or "Witch Doctor," of whom there are legion. Our readers must know the aborginal doctors of Africa are not mere "general practitioners," they are "specialists" of no mean merit. Their characters and functions are those of "diviners" or "spirit doctors." Various names are given to these specialists, depending on their particular jobs. One is "Izinyanga Zokubula" (the doctors of "smiting"), simply and for no other reason than that a tremendous use is made of canes for the purpose of smiting the ground by any of those who call upon them by appointment for a consultation. Then there are the "Izanusi" or the "Smellers out," a rather high-toned medico-legal affair for running down criminals (alleged), consulted in extreme cases for the purpose of discovering those possessed with witchcraft. These are believed to be in communication with the spirits of the great and glorious "Amatonga," or spirits of the departed, and reverenced among the tribes. These crafty semi-lunatics receive nothing short of an ox in compensation for their services and often a he-goat thrown in for good measure. The spirit doctors are the health inspectors of their respective communities, through the discharge of their sacerdotal functions, and in their prayers and invocations of the spirits own their poverty, weakness and dependence, and ask, inter alia, for health, strength, etc. To the Zulu's mind the whole of southern Africa is peopled with wizards, with most dangerous dispositions, depositing poisons along the trails and in their kraals.

An important functionary, and one who stands on a par with the laboratory research man in the therapeutic medicine of our lands, is the "Lightning Doctor." Because of the great fear engendered in the mind of the native for lightning, and the supposed powers possessed by these lightning doctors of diverting the electric currents in any direction they may choose, these experts are largely consulted during thunderstorms by those who stand in awe of them. They use a charm consisting of a little bundle of sticks which are supposed to have been medicated by the lightning doctor so that no harm may occur to the huts or kraals which bear them. The medication, they are told, consists of the fat of the "thunder storm bird," which these specialists avow they go out and find in the thunder storms.

Then there are the Rain Doctors, the Drought Doctors, the Sunshine Doctors, the Doctors of men, the Doctors of women, the Doctors of children and babies, and a thousand and one other doctors—all quacks, with their quantities of fetich medicines and enchantments. The specialization of modern medicine even

might take a few hints from the great subdivision of the Zulu doctors. For the hunter they have one kind, and for the warrior another; and so on, down the line of their clientele. In their divining baskets, or what would tally with the modern civilized medicine-man's medicine cabinet or instrument cases, may be found a weird and woozy collection of human finger bones, teeth,—human, animal and reptile; claws of wild birds and monkey paws, seeds of all descriptions, stones of grotesque shapes (which are rattled together by the diviner until the spirit comes and speaks to him). There is not so very much difference between them and ourselves—the spoiled pets of civilization, from this angle of "medical" incidence.

There are two of these idols to the tribe. The wooden one is for men and children, and the ivory one for women. They hold the tribesmen in abject submission.

When you remember Voltaire's cutting observations about the class of people who pour "drugs of which we know little into bodies of which we know less," you cannot then blame these ebony sons of Africa when they order some relation or friend to swallow the nasty, sometimes death-dealing dose, preferring to be cured by proxy, if cure it may be called. I feel that for their age and generation they know considerably more than we are prepared to credit them! During my travels in the "dark continent," which extended over a period of twenty-one years, I have known of many unfortunates sent to an early and painful death at the hands of the "medicine-man."

A baby is ill, and the anxious heathen mother rushes out for the medicine-man, her soul filled with superstition and fear. She arrives at the kraal of this autocrat of the African jungles, does obeisance to this most cunning of all rogues in the world, tells her sad story, and rushes home for her child. Upon her return, lo! the medicine man has arranged his "lay-out," topped off by one of the healing idols of the tribe and put on his mask to make him look wise. There are two of these idols to the tribe, the wooden one for men and children

For this identical ivory god blood has been shed. The warfare ceased only when the god mysteriously vanished.

and the ivory one for gynecological difficulties. These idols hold the tribesmen in abject submission, they are among the highest prized possessions and for them tribes will go to war. Blood has been shed over the ivory god here pictured and the strife ceased only when the idol mysteriously vanished.

Upon her return the Witch Doctor has arranged his paraphernalia, topped with one of the idols, put on his mask to make him look wise, and armed himself with his medicine wand.

The medicine-man then produces his medicine stick, in which is bound all manner of venoms (including human heart flesh), with which he produces an infusion by dipping it seven times in warm water, and then pulling out a lion's mane hair from the head of his mask, places it in the concoction, and gives it to the child to drink. I have often wondered if the poisons are a savage version of the more modern "Similia similibus curantur," another of which is. "a hair of the dog that bit you," in order to reach directly the heart of the distress. It may happen that the child vomits violently and is sometimes purged, and perhaps gets well—so the medicine man gets the credit, and is largely advertised thereby.

Should the child die from pathological conditions, or from the poisoning of the medicine-man, then it is avowed that the evil spirits killed the child in spite of all that the regular practitioners could do to save it.

Among the Zulus I have observed that they resort to herbs more or less, using as many as several hundred of them. For example, they have found a plant the leaf of which is used in hemorrhoids with good results in some cases, through local application of leaf. They use another plant known commonly as the "sour fig"—a sort of running succulent vine, found in sandy soil and along the beaches of lakes. The fig is gathered and dried and may be eaten as a food, or used in syrup form for coughs; the leaves are crushed by the natives and an infusion freshly made and used in cases of sore eyes. (Modern Americans make use of a syrup of figs) Fresh cow manure is universally used among the tribes for poultices, in much the same way that bread or flax seed are used by

Here is Banzi N'Tuli, son of a chief and now a chief himself. He is an example of the splendid Zulu, active, muscular, with every muscle under control. He can throw his assegai fifty yards and put it through a corn stalk. His name signifies John of the Water, having been born by a river.

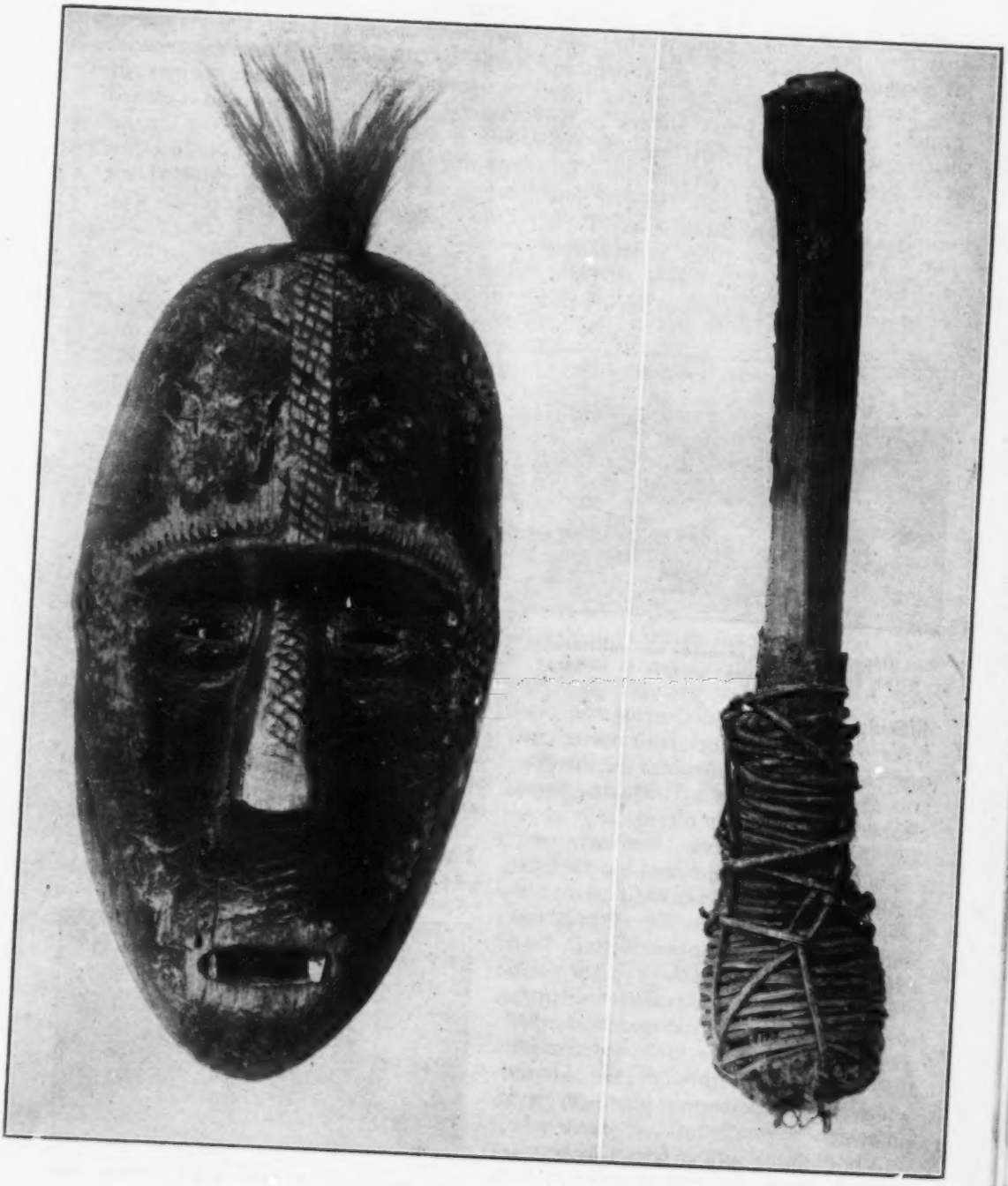
us. This measure, however, they employ as a general household remedy, and without consulting the medicine-man.

Among certain of the tribes is a rather interesting practice of an awkward and somewhat crude form of spinal vertebral adjustment. The men and women of the kraal, after returning from the long trail, or the hunt or the war-path, throw themselves on the ground on their ventral surfaces, which is taken as the sign by the youngsters to walk barefooted or crawl on their knees up and down their spines. The person so treated then rolls over and basks in the sunshine thoroughly relaxed. Incidentally, it may be mentioned that our Indians practice this health measure, and I have learned recently from an old Armenian woman patient that when she was a child she remembers crawling on her bare knees up and down her old mother's back whenever she was tired. The object aimed at is that any strained, twisted or subluxated vertebrae may by this primeval concussion be adjusted so that pressure may be taken off any impinged nerves. They certainly have a crude idea of the underlying principles of modern Chiropractic, which has come to them through centuries of experience.

In a general way, the native of Africa attends to his personal hygiene pretty much after this fashion: He indulges in the bath as often as he gets near running water, provided it is not infested with man-eating animals. In case it is, he stands on the brink and keeps a sharp lookout for any monster, such as a crocodile, hippopotamus, or rhinoceros, or for reptiles. He then plasters his feet with sand, wets them and rubs off the dirt and calluses on the smooth surfaces of stones of the river; he then scoops up water with a dipper formed out of his hand and rinses his mouth. He cleans his teeth with his index fingers—the only tooth brush known to the aboriginal. Nasal douching is practiced by sniffing water from his hands at running rivers —this is in the warm weather. After these ablutions, he moves further up the river and quaffs his thirst by lying on his belly and drinking. During the winter months, however, he anoints his body with oils and any kind of old, rancid fat he can secure to keep out the cold, and then adds colored clays till the final result is a grotesque picture. All this coating is removed, as indicated above, in the summer time, usually with the assistance of the inside fiber of an alkaline gourd, thus breaking up the fats, etc., and our dusky warrior emerges as from a cocoon to wing his way through the spring and summer months.

Circumcision is practiced. With reference to their women; they are kept from immorality, first by careful kraaling and a constant watch over them. They are classed with cattle as property. Adultery is swiftly and surely punished. The man suffers death, while the woman is marked by the cutting off of her right ear. She is turned out of her master's kraal and is practically branded as an outcast. Venereal disease is practically non-existent, and bears among the natives the name the "white man's sickness." Widows are expected to marry their husband's brothers, and raise up children to their deceased husband's name.

Dentistry is no part of the native methods. I have occasionally extracted teeth from members of the tribes. It has always been an occasion of festivities, with the immediate members of the kraal and their dogs admitted. All joined in chanting and singing and clapping of hands, while the dogs contributed their share in the concert most lustily—the underlying idea of all this being that the patient would not feel pain. At all events, even if he did, they have made sufficient noise to satisfy or frighten the spirits, and evil after effects have been warded off. This relationship of noise to the disturbing of evil spirits is fairly common in primitive folk lore, and in America is exemplified by the increasing



custom of celebrating New Year's day with gunfire and noise.

Among these people there is no science of sanitation, but a few customs that they practice probably in the light of experience. There is no system in the caring for household wastes, the grounds about the kraal always being littered with them. When, however, the place becomes too unutterably dirty for them to remain in any longer, they simply move to some other spot. Their huts are light wattle construction, thatched with grass and easy to build, while the household impedimenta are not

The place sometimes becomes too unutterably filthy for even savage people to endure.

difficult to transport. One of the pictures which I was fortunate enough to catch is that of a kraal which the inhabitants are on the point of forsaking for a cleaner abode. With reference to location, as a general rule, the natives of southern Africa have found out that the highlands are more healthful than the lowlands; islands preferable to the mainland, and dry localities better than swamps and humid areas.

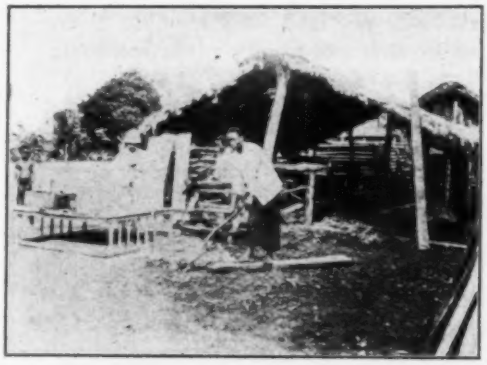
For bedding, the savages use mats, easily made and easily disposed of when worn, and they have the wooden affair that is common through the Orient, which is truly a vermin-proof, hygienic pillow.

While the South African tribesman has, of course, no very accurate notion of anatomy, there are occasionally incidents which show the result of experience, probably acquired in the time-honored method of being handed down from father to son. The following incident was my own observation, the very converse by the way, of their system of recuperation after strenuous times of exercise, in which a subluxation is caused with a definite object in view. On inspecting the possessions, including the cattle, of a worthy young chief of the Zulu tribe, the following remarkable feat was performed: milking a savage cow, that kicked over Kaffir after Kaffir in succession the moment they attempted to milk her. The young chief, however, walked boldly up and seizing the cow's hind foot with both hands, dragged it out behind her, holding it firmly in spite of her struggles, until he succeeded in resting her hoof on his shoulder, when the frantic cow became quiet, and stood still to be milked by him, giving no further trouble. What really happened was, in my judgment, a subluxation either in lumbo-sacral, or sarco-illiac region, or both, and an impingement of nerves of sufficient pressure to prevent pain or induce numbness of temporary duration resulted, so that the animal either did not feel the milking or the unpleasantness caused by milking was removed. In any case the young chief knew something of practical anatomy, which was the point to be considered.

In some places the housing problem is under solution, for the missionaries with good advice, and with examples of

They merely flit to some other locality and set up their kraal anew.

their own handicraft, are showing the natives how to construct little frame buildings, using the materials of the country, the regular thatch, etc., but making houses rather than huts. These two or three room cottages are thus gradually replacing the old filthy huts.



The missionaries are attacking the housing problem in South Africa, and with examples of their own handicraft are teaching the natives how to construct two or three room cottages.

In the matter of diet—the material provided for the meals and the manner of partaking of them are both curious and interesting. For the fundamental principle in communal supplies, or as a guest, or as a member of a family, is the measure of food. The measure of meal then to be taken is two handsful. The hand is dipped into the supply of meal and what can be brought up in the successive dippings of right hand and left is the ration. The reason for this custom is because their gods gave them two hands and one stomach, and they are entitled to fill both hands to fill the stomach. It is by no means a bad measure. Occasionally, among these people, as among their civilized brethren, there are means of securing a larger share, as when one can get some reason for employing a larger hand than his own in the apportionment of the meal. Their dietary is varied and curious to a white man. Monkey flesh is rather choice when soaked in banana vinegar; field rats may be used to strengthen your dish of baked beans; snails are eaten (certainly of high caloric value), while snakes may be worshipped when alive or boiled and eaten after they are killed. New milk is a staple article of food and also a mixture of sour milk and kaffir beer (Amarsa), making a "bonny clabber." Locusts and white ants are roasted by themselves, or boiled together with green seeded grass reduced to a gelatinous mass —a good food under conditions of famine; coarse meal boiled or sodden is a staple. Almost any kind of game is eaten, but be it remembered all meats are prepared intact, and, after the native custom, insides and outsides in toto, otherwise the good flavor is lost—and as with our epicures they should be kept until quite gamey and are then most delectable.

To live among these people, you must eat "a l' African," and you do, if you eat anything from their kitchens. Their diet in certain localities has a tendency to be rather monotonous, for the reason that should you die they can more readily ascertain which food killed you. As a general thing, honey, both wild and sweet, figures largely as a part of the diet among the tribes in the highlands, while wild fowl figures largely in the menu of the lowlanders—fish, of course, being the staple food along the lake districts. On the Zambese watershed the Somali tribes both eat and worship snakes of all kinds, while the Zulus use various parts of their bodies for medicinal purposes only. Caterpillars (furry ones) are said to be dainty morsels among the Bangala, Bafioti and the Massai tribes along the tributaries of the Congo, and one can just imagine what a delightfully velvety feeling they must cause on deglutition. In these latter days, dogs are petted and pampered, pretty much as "fatted calves" reserved for special feast days, when they are gluttonously devoured. Even human flesh is indulged in among some of the tribes and considered a noble delicacy.

Of course, cattle are eaten betimes, but are more often used in trading for wives and other merchandise. When other delicacies fail, there are the staple kidney beans, bananas and meal. Swine flesh is rejected as a thing unclean.

Beer, of native brew, is the national drink—I may say beer drinking is their national sport. Never attend a Zulu beer drinking party unless you are well covered and have your umbrella with you, for they worship their respective family spirits by drinking and spitting or spouting the beer into the air and at each other.

There is a very rude and primitive pharmacology practiced by these natives. Native mothers have been known to administer powerful emetics to their children who have dared to profess Christianity in order that they give up the new religion. For snake bites the natives use the root of the yellow daphne. This they learned from the toads, as, according to their tradition, these intelligent creatures had been seen to hop to this herb after having been bitten by serpents. In general, however, the use of home medicines is very limited and rudimentary and the main dependence is placed on charms which are worn as prophylactics. There are some common charms, such as the cure of mumps by a visit to the hole of the antbear. Here the afflicted one shouts "Uzagiga! Uzagiga!" (the mumps, the mumps), and returns to his home without looking backward. This idea of not looking back, or of not ceasing to look, is of importance in certain ceremonies. For example, during the funeral observances attending the death of a chief (one of which is the slow smoking of his body for a number of months), his wives must lie in the kraal in which the preservation process is under way, and never turn their faces from his body. The same idea of looking is common in the superstitions of other peoples, as, for example, the omen bird of Borneo; while the looking backward idea persists in the Halloween divination games of civilized peoples in Europe and America.

In the use of charms these African natives have but their own version of the world-wide superstitions, and if I am not mistaken, they are not so very far removed from ideas prevalent not so many centuries ago in lands considered then to be civilized. Somewhere I have read of this interesting prescription:

> Tooth of fox and weasel's bone,
> Eye of cat and skull of cat,
> And the hooked wing of the bat;
> Mandrake root and murderer's gore,
> Henbane, hemlock, hellebore,
> Lithium, storax, bdellium, borax,
> Ink of cuttlefish and feather
> Of screech owl, smoke together.

and it is a prescription something like this used by the natives in the purification known as "Icima mlilo" (fire quencher). It is usually necessary to bathe in the river after taking such a medicine.

Good health is indicated by the power to sneeze. Sneezing thanks are offered to the spirits of ancestors upon occasion. Lucky is the time spent in sneezing and on occasions the natives will suspend all operations for a time for a sneezing festival. To induce the pleasurable explosions, a kind of snuff is used. It is the custom for the witch doctors to sneeze quite a bit during their divinations and this indicates that the spirits are present and propitious.

There are among these people quite a number of health factors which should not be left unconsidered, even in so general an outline as this. They live entirely in the open with all the advantages that fresh air can afford. Their garments are few and loose—usually a kaross or moochie, which is the suggestion of a girdle, a bull's hide shield and a bunch of assegais or arrow spears. There are no constrictions—having no corsage there are no wrong lines induced with their consequences, and it may be said in this freedom, their feet being shoeless, these are about as intelligent as their hands.

Cheerfulness and contentment are

likewise powerful factors for good among these people. They have these conditions in almost perfection, and are saved from those results that attend gloomy and depressed dispositions.

Innumerable objects of interest pass under their observation; there is the prospect of constant change of scene when on the trail, the hunt or the war-path. If the outlook is not pleasing, the native simply moves his whole kraal, family or tribe, to pleasanter scenes. His

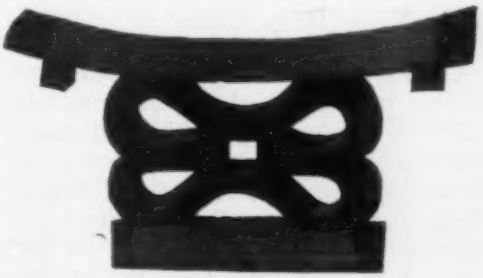
They live entirely in the open, with all the advantages that fresh air affords.

one hope is that of success. The African savage is a thinking man—an innate philosopher. He is rarely, if ever, morose; he eats well and sleeps well, and he engages in healthful recreation. He sings, dances and tells stories to pass the time, smokes and snuffs in moderation—these two latter items being somewhat of a quasi-religious observance. He avoids as much as possible the rays of the sun and does not work or travel during the hottest parts of the day, but indulges in a quiet siesta in the shady parts of the jungles or under cover of his kraals.

In conclusion, it is simply to be said that the health administration of the South African tribes leaves much to be desired. Some practices have grown up like that of the measuring of proper ration by the two filled hands, that seem to be original and sensible; but, on the other hand, some rules, such as the omission of pork from their menu, suggest Hebrew or other influences in the distant past. Their care of their women results in a scarcity of venereal disease from which condition the civilized nations of the earth may well take pattern. The climate is essentially one conducive to living in the open air, which is an important factor in health. Their seasons are two, either luxuriously wet or hopelessly dry. Their day shifts into night or night to day without the intervening twilight, a condition set forth by Kipling in those lines that puzzle so much the dwellers in temperate latitudes:

"And the dawn comes up like thunder
From old China, 'cross the bay."

Permeated with superstition, sustained by the coincidences that seem to support the practices of the witch doctor, their religion and their therapy need the help of the civilized nations, for both of them linger in aboriginal shadows. The Zulu is happy in his free life and contented with his quiet fortunes, but in this country there is ample room for the gentle influences of a twentieth century helping hand, now being extended to other nations hitherto on the outskirts of the earth.



Zulu wooden pillow.

CAUSES OF ARMY REJECTIONS: WHAT HEALTH OFFICERS CAN DO TO REMEDY CONDITIONS

FRANK R. KEEFER,

Colonel Medical Corps, U. S. A.,
Carlisle, Pa.

Read before Section of Public Health Administration, American Public Health Association, at New Orleans, October 28, 1919.

Colonel Keefer, who advises that every health officer become a member of the A. P. H. A., outlines the story of army rejections and analyzes the causes. Health officers hold the strategic position. They should invoke prevention, get statistics, establish machinery for corrective work and foster and direct public opinion through education.

I. CAUSES OF ARMY REJECTIONS,

The examination of millions of our young men, incident to the selection of those who composed the great army which served under our flag in the world war, afforded a unique opportunity to make a physical census on an unprecedented scale. The opportunity was not neglected, and the immediately available records have just been fully compiled. They include 2,000,000 men sent to camps and 550,000 rejected by local boards. The studies so far published are contained in the first and second reports of the Provost Marshal General of the Army, a bulletin from the office of the Surgeon General entitled "Physical Examination of the First Million Draft Recruits," and a Senate committee report on "Defects Found in Drafted Men."

Of more than 24,000,000 selective service registrants who were enrolled, 5,719,152 were subjected to physical examination, and their records turned in to the Adjutant General of the Army. These figures do not include the hundreds of thousands of volunteers for the army, navy and marine corps, the records of whose physical condition may also presently be available for complete study.

The data used for the purposes of this discussion are based on the second report of the Provost Marshal General, and include nearly half a million individuals rejected for physical defects. During the period covered by this report, 3,208,446 registrants were physically examined. Three sets of figures are employed: these comprise 255,312 rejected by local boards; 172,000 refused by camp surgeons after acceptance by local boards; 40,382 discharged from the army after acceptance by local boards and by camp surgeons. These figures represent the broadest basis ever available for such an inquiry. They were prepared under circumstances of fair uniformity as to area, time, physical standards, and working conditions hitherto unequaled.

Of those listed under the first head (local board rejects), 29.59 per cent of men examined were found to be physically disqualified; 8.1 per cent of those who reported at army camps were rejected on re-examination. Thus, considerably more than one-third of our drafted youths were found to be unavailable for military purposes by reason of physical defects. In addition, a considerable percentage of accepted men required discharge shortly after enlistment for similar reasons.

Furthermore, the figures and percentages given are more favorable than are fully warranted, since the physical

standards required in peace times were markedly lowered. As a result of these lowered standards, the commander of each mobilization camp was obliged to segregate, in so-called "Development Battalions," several thousands of incompetents having defects which unfitted them for immediate military training. The number of cases of venereal disease, bad teeth, hernia, flat feet, toxic thyroid, middle ear disease, underdevelopment, and other correctible physical defects was very large. The presence of these individuals constituted a serious drag in the training of each division. Later, many such substandard individuals were utilized for positions (clerical, etc.) in the military service which did not require robustness and mobility. To illustrate by a single example, at Camp Funston, Kansas, within two months, more than 5,000 venereal cases were found among drafted men. During the same period only 28 new cases of this character developed among the men already in service at Camp Funston, which fact demonstrates the efficiency of the preventive measures adopted by the Army and the Public Health Service.

The causes for rejection of the cases studied are listed under general headings which, with the figures and percentages for each, are shown in the table below:

An analysis of the figures given in the foregoing table shows that more than 88 per cent of the rejects could be classified under a few heads, as follows:

	Per cent.
Conditions which prevented free mobility	26
Defects of special senses	15
Cardiovascular cases	13
Nervous and mental abnormalities	10
Tuberculosis	9½
Defective physical development	8
Hernia	6

In the general study of the available data, several striking facts are promptly apparent. One of these is that certain physical defects show a wide variation in regional distribution. Another is that a considerable physical advantage accrues to the boy reared in the country. A third is that a comparison between alien and native-born registrants is decidedly fa-

VARIETIES OF PHYSICAL DEFECTS DISQUALIFYING FOR MILITARY SERVICE.

Causes for Rejection.	Total rejections by local boards and camp surgeons.		Rejected by local boards.		Accepted by local boards but rejected by camps surgeons.		Discharged from Army after acceptance by local boards and camp surgeons.	
	Number.	Percent.	Number.	Percent.	Number.	Percent.	Number.	Percent.
1. Total for all causes	467,694	100.00	255,312	100.00	172,000	100.00	40,328	100.00
2. Alcohol and drugs	2,007	.43	231	.09	1,238	.72	538	1.33
3. Bones and joints	57,744	12.35	33,283	13.04	19,623	11.41	4,838	11.98
4. Developmental defects (height, weight, chest measurements, muscles)	39,166	8.37	27,293	10.69	11,538	6.71	335	.83
5. Digestive system	2,476	.53	1,586	.62	448	.26	442	1.09
6. Ears	20,465	4.38	12,100	4.74	6,445	3.75	1,910	4.73
7. Eyes	49,801	10.65	32,775	12.83	15,367	8.93	1,659	4.11
8. Flatfoot (pathological)	18,087	3.87	3,342	1.31	13,234	7.69	1,511	3.74
9. Genito-urinary (venereal)	6,235	1.33	2,042	.81	2,744	1.60	1,449	3.59
10. Genito-urinary (non-venereal)	6,309	1.35	3,054	1.21	2,226	1.30	1,029	2.55
11. Heart and Blood vessels	61,142	13.07	36,470	14.28	19,268	11.20	5,404	13.38
12. Hernia	28,268	6.04	8,473	3.32	18,353	10.67	1,442	3.57
13. Mental deficiency	24,514	5.24	14,417	5.65	6,293	3.66	3,804	9.42
14. Nervous and mental disorders	23,728	5.07	10,945	4.29	7,319	4.26	5,464	13.53
15. Respiratory (tuberculous)	40,533	8.67	27,559	10.77	10,792	6.27	2,182	5.40
16. Respiratory (non-tuberculous)	7,823	1.67	3,081	1.21	3,483	2.02	1,259	3.12
17. Skin	12,519	2.68	12,207	4.78	213	.12	99	.25
18. Teeth	14,793	3.16	4,314	1.69	9,952	5.79	527	1.31
19. Thyroid	8,215	1.76	3,151	1.23	3,697	2.15	1,367	3.38
20. Tuberculosis of parts other than respiratory	4,136	.88	3,853	1.51	159	.09	124	.31
21. All other defects	14,314	3.06	12,671	4.96	1,373	.80	270	.67
22. Causes not given	25,419	5.44	2,465	.97	18,225	10.60	4,729	11.71

vorable to the latter; thus, in every 100,000 men, the native Americans would yield 3,500 more, a number which would fill the ranks of an additional regiment of infantry, at war strength. Fourth, that more than 50 per cent of rejections at camps were on account of defects that were so obvious that they should have been readily recognized by any competent examiner.

II. What the Health Officer Can Do to Remedy Conditions.

If such fact were not already a matter of common knowledge, the data just cited clearly indicate that an immense amount of preventable and correctible physical disability exists among our population.

More than any special group, even in the medical profession, health officers occupy a position of strategic opportunity with reference to the matters under discussion. They are first to apprehend conditions threatening community health and to take measures for their prevention; they have a fine organization—the American Public Health Association—and they are charged with the duties of shaping public opinion and of influencing legislation. The routine duties of health officers are all in the direction of remedial action of this kind. And, by an extension along the lines urged by advanced sanitarians and already largely practiced by many, the desired ends can be accomplished.

It is not necessary here to enter into an extended discussion of well known courses of action, and I shall merely indicate the lines along which, it is thought, the health officer may and should proceed in his efforts to improve the physical conditions of young men; and, incidentally, of all others, in so far as circumstances may apply.

First: The prevention and control of transmissible diseases. This, as a matter of course, includes the teaching and enforcement of hygiene, personal, juvenile, school, industrial, and social, as well as the practice of useful measures of sanitation.

Second: A census of the population with special reference to remediable physical defects. This might be arranged for as a part of the next general census. So far as young men are concerned, the physical examinations incident to universal military training, if such is instituted, will provide the necessary information. Thereafter, regular examinations should be held.

Third: The development of effective machinery for the correction of remediable defects found in individuals. Thus, classes may be organized for exercises to strengthen weak muscles and to correct certain foot deformities or developmental defects. Operations may be performed for the cure of hernias, of bone and joint abnormalities, and of other surgically remediable imperfections. Defective vision may be aided by appropriate lenses. Diseased teeth and gums may be restored to a healthy state.

When individuals cannot afford the necessary hospital and other expenses, arrangements might be made with members of the medical and dental professions, with hospitals, and with municipal and state authorities, to render such aid as the circumstances warrant. This action was successfully taken in certain states during the war, under the direction of the Medical Aide to the Governor in association with the draft. A number of individuals disqualified by reason of remediable defects were then made available for service. Reconstruction work for cripples, as now practiced by the Army Medical Department, has had excellent results and points the way for an extension to the general public.

Fourth: The creation and fostering of public sentiment; the shaping of legislation looking to the improvement of health conditions, general and local; the correction of defects and deficiencies within the municipal, state and Federal health organizations.

Many communities have no health officers, or only such as are untrained, indifferent, or under the control of politics. Health laws are largely deficient or non-enforceable. Funds are everywhere lacking or inadequate.

Enthusiasm—not merely time serving—is the greatest asset. Health officials should be chosen on the basis of their special knowledge of the subject, or because of known executive ability. Public health study might well be made a requirement for graduation in certain medical and engineering schools. More post-graduate medical schools should give courses in this subject and should confer the degree, Doctor of Public Health.

To my mind, the greatest need is the education of the public as to the importance and practicability of the measures necessary to safeguard the public health and to correct existing defects. The time is ripe; as a result of experiences gained during the war there has been a notable awakening, general as well as medical, in the matter of public health. Thousands of our physicians, millions of our young men, have acquired some knowledge of the importance of disease prevention, and of the principles and methods involved.

In the improvement of the conditions under discussion, the health officer can join forces wholeheartedly with the military medical officer. The one is solicitous for better health conditions within his sphere of influence. The other is desirous to make available for the military needs of the nation, the full power of youthful manhood. Both are anxious to elevate physical conditions among the American people.

It is quite conceivable that if we determine to "get together" and to develop efficient team work among the intelligent elements of our citizenship, it may be readily possible to bring about the establishment of a Federal Department of Health, with a presidential cabinet member as its head. Federal, state and allied health organizations, doctors, lawyers, engineers, educators, nurses, religious bodies, city officials, chambers of commerce, rotary and civic clube, labor employers and labor federations, granges, welfare societies and the press, should all be enlisted. And the first step in the campaign should be to induce every official associated with public health work to join the American Public Health Association.

□

Are Postage Stamps Dangerous?—This question has doubtless occurred to many sanitarians, and the answer has not always been forthcoming. Recently postage stamps were collected from 50 different sources. The bacteria on them were shaken off into sterile salt solution, and 1 cc. portions were plated out on agar, and incubated at 37° C. for 48 hours. Twenty specimens contained colonies too numerous to count. No stamp was free from germs. Some of the organisms identified were *B. coli*, staphylococci, streptococci, pneumococci, and diphtheroid bacilli. No virulence tests were made. Since most of the organisms are normal to the mouth, the results are not particularly significant. It should be remembered that if stamps were a grave source of infection, a large percentage of the population would be suffering from some disease common to all, as almost everybody licks the postage stamp. Since the gum of the stamp is a favorable medium for bacterial growth, it is important not to infect the stamps before they are used. Since the opportunties for mouth infection from other sources are so numerous, it is concluded that the danger from postage stamps is comparatively small.—*Am. Medicine*, October, 1919. (*M. P. H.*)

AN IDEAL PROGRAM FOR CHILD HYGIENE

ALLAN J. MCLAUGHLIN,

Assistant Surgeon General, U. S. Public Health Service, Washington, D. C.

Read before Special Sessions on Child Hygiene, American Public Health Association, at New Orleans, La., October 30, 1919.

A nation-wide program is here recommended to include Federal assistance to the states not to exceed fifty percent of the cost, with the states effecting an immediate stock-taking of baby saving machinery, together with the pooling of resources.

The scope of this paper will not permit treatment of the subject in its ultimate details, but the general lines of organization should be as given below:

The ideal program for Child Hygiene must be nation wide in scope in order to secure the maximum results.

To secure a synchronous attack upon infant mortality and the many other problems involved, it is necessary to have a coördination of all state activities according to minimum standards established in a federal program. Similarly to make the ideal state program effective there must be a uniform state plan applied by every health unit within the state.

The state program should provide for an immediate survey of every health unit in the state to show what each community now possesses in baby saving and child hygiene machinery and to show also exactly what each community lacks in this regard. The survey report with accurate statement of needs and specific recommendation for supplying those needs should be placed in the hands of the local authorities to be carried out with such amplification as the local committee might deem advisable.

The local plan should be outlined by the state and carried out by the local authorities with such additions or modification as may be necessary to suit local conditions.

The secret of success for any program, federal, state or local, will be found to be a pooling of the resources and activities of all the official and unofficial agencies operating within the given jurisdiction.

It must be borne in mind that unofficial agencies have initiated most of the work which has been done in infant mortality and other problems of child hygiene. There is just one way to coördinate properly and utilize to the fullest extent, without duplication and conflict, the splendid activities of the unofficial agencies with the Public Health authorities, and that is by means of a consulting and advisory board to the official body having jurisdiction. The board or committee must exist in all three types of organization, federal, state and local, and should be composed of experts in every phase of child hygiene and representatives of all unofficial agencies whose work comes within the scope of child hygiene.

The federal program should provide for assistance to the states on a basis of not to exceed 50% of the preliminary expense of making the necessary surveys and demonstrations. This will require legislation analagous to that enacted for good roads, vocational education, and farm demonstration work.

The Federal Government by means of its advisory board would have the sup-

port for the official agency of every national organization represented thereon, and from its consulting experts receive invaluable advice in framing its policies and putting them into effect.

The State Government would find the same valuable expert advice in its advisory board and the same support from the unofficial bodies represented. The state program would thus appeal to both official and unofficial agencies in the local health units, and insure through the local advisory committee the united effort of both the local health authorities and the unofficial agencies upon a common program.

THE ILLINOIS PROGRAM IN CHILD HYGIENE FOR THE COMING YEAR

CLARENCE W. EAST, M.D.,

Chief of Division of Child Hygiene, Illinois State Department of Health, Springfield, Ill.

Read before Special Sessions on Child Hygiene, American Public Health Association, at New Orleans, La., October 30, 1919

In its child hygiene work Illinois will use its health centers for a foundation and pursue salesmanship methods for follow-up. Rural public health centers, child hygiene stations and public school nurse units are to be established and all these agencies worked in coördination.

THE Illinois Program in Child Hygiene for the coming year consists of what we shall do and what we shall attempt.

I. What We Shall Do:

(1) We shall build upon the foundation of the twenty centers which we now have for reconstruction work among crippled children.

Beginning with the summer of 1916 Illinois has had recurring outbreaks of infantile paralysis. Each year has furnished reports of from 300 to 1000 cases. In an endeavor to remedy the sad results we have been conducting 20 field clinics throughout the State which we visit from once weekly to once every two months, and examine and treat from 15 to 60 children in each clinic. An important result has been a general stimulation of interest in child welfare and public health. We have been able to broaden our work in every center and to reach communities tributary to our clinic centers not only for educational effort, but for the establishment of child welfare stations, school nursing and other public health activities.

Were it within the province of this paper we would strongly recommend some definite form of obvious service, such as work for crippled children, as a most efficient method of propaganda.

(2) We shall follow up a large number of "prospects" as a salesman does.

These prospects come to us out of the rising general interest in child welfare, out of the various public health nursing services so rapidly being established by various agencies, out of the interest created by our State Department of Public Health Baby Contest which is a big feature annually of the Illinois State Fair, and out of the propaganda work done in season and out of season by our workers. In following our prospects our first objective is the establishment of public

school nursing and then child welfare stations. We have enough of these prospects to keep one field nurse busy all of the time with not infrequent assistance afforded by the Chief of the Division and the Supervising Nurse.

II. What We Shall Attempt:

(1) What we shall attempt this year is founded upon the axiom that public health nursing is fundamental to all child hygiene activities.

We shall attempt to coördinate all nursing activities in every field where several agencies are at work. This will be the entire program of our State Supervising Nurse. At the end of the year we expect to have no overlapping of public health nursing services anywhere in Illinois. We shall expect to develop each service to its very highest efficiency.

(2) We shall attempt the following definite items of work:

(a) The engrafting upon every nursing service whatsoever of a comprehensive program in child hygiene.

(b) The establishment of public school nursing in every place where there is a nursing service of any kind.

(c) The establishment of public health nursing in rural communities. After adequate survey we shall seek to join the efforts of rural school districts, township governments and whatsoever agencies we may enlist in a given field in support of public health nursing service.

Child hygiene will be the keynote of all such services established.

TO SUMMARIZE.

(1) To render service of a striking type such as reconstructive work for crippled children.

(2) To coördinate nursing agencies.

(3) To establish child welfare stations in every place where public health nursing is done.

(4) To establish public school nursing.

(5) To establish rural public health nursing centering usually in the school houses.

□

Medical Supervision in the Framingham Schools.—It is recognized that Framingham has one of the best systems of medical inspection of school children which can be found in this country today. The personnel employed to safeguard the health of the children consists of a full-time school physician, a nurse, a dental hygienist, a teacher of posture training, a physical training director, and a part-time dentist for approximately 2,500 grade children. The following results were found from a very careful survey of approximately the whole number. The tests to determine the condition of nutrition showed that 6.8 per cent were excellent; 43 per cent good, 41.9 per cent fair, 8.2 per cent poor, and 16 per cent anaemic. The tests for defective teeth, enlarged tonsils and glands showed that 60 per cent had defective teeth, 45.2 per cent enlarged glands, 28 per cent slightly enlarged tonsils, 10.9 per cent tonsils of considerable size, 7.7 per cent tonsils, markedly enlarged; and 12 per cent suffered from nasal obstruction. Other tests showed that 6.5 per cent had defective vision, 2.3 per cent had other eye diseases, 2.2 per cent had defective hearing, 2.5 per cent had discharging ears, 3.5 per cent had skin diseases, 12 per cent had postural defects, 3.6 per cent had initial murmurs, 1.3 per cent had aortic murmurs, 0.9 per cent had pulmonic murmurs, 1.5 per cent had functional irregularities of rhythm, 1.0 per cent had organic diseases, 7 per cent had bronchitis, 0.45 per cent had pulmonary tuberculosis, 0.24 per cent had pleurisy, 0.9 per cent had nervous diseases, 0.48 per cent had speech defects and 0.9 per cent had mental defects.—W. B. Howes, M. D., *Boston Medical & Surgical Journal*, Oct 2, 1919. (*M. P. H.*).

Get Ready for April A. P. H. A. Campaign.

Objective—Membership of 7,500.

NEED OF STANDARDIZATION IN SCHOOL HYGIENE METHODS

H. O. Jones, Ph.G., M.D.,

Asst. Bureau Chief; in Charge of Division of Child Hygiene, Department of Health, Chicago, Ill.

Read in the Program on Child Hygiene, American Public Health Association, New Orleans, La. October 28, 1919.

The time is ripe for a national campaign in educating communities about safeguards for healthy development of school children. There is urgent need for this. Standards do not exist, nor are there means of enforcing any. School hygiene is truly formless with conflicting information and advice.

THE consensus of opinion is that the necessity for school hygiene activities has long passed the questionable and experimental period.

The vast supply of information and statistics that have been gathered and compiled by those who have done pioneer work in school hygiene for the past twenty-five years, leaves no doubt in our minds as to the necessity of extending this work to all communities where it has not been established. Every school child is entitled to have every possible help and safeguard operating to his benefit during his school life.

Authorities under the compulsory education law, force the child to attend school a certain number of hours each day during a given period each year for a certain portion of his life. This is sound policy and leads to better education; but hand in hand with this wise provision for enforced education of the child, communities should also secure and enforce laws that will enable the authorities to supply suitable buildings, adequate light, satisfactory heat, proper and efficient medical protection and physical control for the children, so that finally we will have physically well developed bodies as well as educated minds.

The time is ripe for a national campaign that will have for its purpose the educating of all communities that now lack in part or whole, safeguards for the healthy development of their school children. A public health movement of this sort would have the support of the five millions of our young men who have just returned from army service. These men know the splendid results to their health acquired through the safeguards furnished them in the army.

The practical absence of epidemics, excepting influenza; the marked physical improvement in all the soldiers during this period of service speaks more than words of what can be accomplished by use of standard public health measures as worked out, adopted and enforced in the army. What has been done for the soldier army, can be and must be done for the army of school children.

As the Federal Government realized the need and provided this service for the army, so must every community be made to feel its responsibility for measures of this kind for their school children. The successful results in the army were due to two factors:

1st. Adoption of standard Methods.

2nd. The enforcement of these standards.

In our work we should utilize these same successful factors to achieve like results.

Is it not the function of this group of the American Public Health Association to formulate and adopt the best standards of school hygiene for the school children of this country, and advise the necessary legislation to provide and enforce such methods?

A questionnaire sent out by the Department of Health of Chicago brought the following information from sixteen of the largest cities in the United States:

I. ADMINISTRATION AND APPROPRIATION.

Nine cities report school hygiene entirely under the supervision of the Department of Health and eight financed by the Department of Health; five cities under the supervision of the Board of Education and six financed by the Board of Education. Two cities report school hygiene activities jointly under the Board of Health and the Board of Education, and in these cities financed by both the Department of Health and the Board of Education.

II. DISTRIBUTION OF SCHOOL HYGIENE SERVICE.

(a) When under supervision of Department of Health: In three cities all schools, public, parochial and private, were provided medical inspection; in five cities the public and parochial schools only; in one city public schools only; in two cities parochial schools only.

(b) When under the supervision of Board of Education: In no city were all the schools inspected. In one city both public and parochial schools are inspected, but the parochial schools only occasionally. In seven cities public schools only were inspected. In no cities parochial schools only were inspected.

3. The per capita appropriation based on reported appropriation and number of school children varied from a minimum of 10.7c to a maximum of 74c for each school child.

4. The number of school children for each school health officer provided: minimum, 2,000 children; maximum, 22,000 children.

5. The number of school children for each nurse provided: minimum, 1,161; maximum, 35,109.

6. The number of children to total corrective agencies available (dispensaries, hospitals) in any city: minimum, 2,194; maximum, 11,700.

7. Percentages of corrections of physical defects found: minimum, 15 per cent; maximum, 54 per cent.

8. Percentage of total children who received physical examinations: minimum, none; maximum, 200 per cent.

This demonstrates the evident lack of standards.

Requests for information relative to the following are frequent:

1. What do you consider desirable legislation?

2. What are the details of your methods and examinations for:

(a) Control of contagious diseases in schools.

(b) Physical examinations.

(c) Mental tests.

3. What forms do you use in school hygiene work?

4. What are your recommendations as to sanitary plans for school buildings with reference to heating, ventilating, plumbing, lighting, etc.?

5. What do you consider desirable equipment for school hygiene activities in school buildings?

6. What are the duties of your school health officer, nurse, dentist, etc.?

7. What educational propaganda do you conduct?

8. What salaries are paid to health officers, nurses, and dentists?

9. Information as to malnutrition and results of surveys of school children.

The Children's Bureau at Washington is now working on minimum standards for children, taking into consideration hours of work, character of work, educational requirements; consideration of

sex and work; prenatal and infant welfare work.

May I suggest to the American Public Health Association that it take some action for the preparation and adoption of standards for school hygiene? The adoption of standards would result in a more uniform progress. It would do away with or minimize the conflicting advice and information now so prevalent. It would result in saving of time and money by eliminating experiments. A better impression would be made on the public if the requirements and the service were universally the same; it would stimulate local health officers and raise the character of their work. It would result in causing a demand from the public on officers of the local governments to provide school hygiene service where none is rendered. It would result in uniformity of information for statistical purposes, and help gain for the school children medical service to which they are entitled.

I would suggest that this section of the American Public Health Association consider the desirability of appointing a special committee for each of the following subjects:

1. Committee on Standardization of Legislation.

(a) To consider desirable laws to provide for the establishment and enforcement of school hygiene.

(b) Standard requirements for admission of children to schools.

(c) To provide funds.

(d) To insure co-operation.

It might be desirable for this committee to work with representatives from the section on Public Health Administration.

2. Committee on Standards for Examinations and Procedures.

(a) For contagious diseases.

(b) For physical defects.

(c) For mentality.

(d) Number of children per health officer; nurse; dentist; corrective agencies, etc.

3. Committee on Standards of Equipment, Records and Nomenclature.

(a) Combined scholastic and health records.

(b) System of forwarding records with child.

(c) Co-operation of educational representatives and health officers.

(d) Provisions for this work in schools.

4. Standards of Qualifications and Duties.

(a) Of school health officers.

(b) Of school nurse.

(c) Of school dentist, etc.

5. Standards of Corrective Agencies.

(a) Eligibility to charities.

(b) Number necessary.

(c) Assignment of nurses, etc.

6. Standards for Prophylactic Work.

(a) Smallpox.

(b) Typhoid.

(c) Diphtheria.

(d) Tuberculosis, etc.

7. Committee on Standards for Educational Propaganda.

(a) Courses in Normal Schools for preparations of teachers.

(b) Courses in regular school curriculum for children.

(c) Text-books for teachers and children.

8. Committee on Engineering Standards from the Engineering Section.

These committees should consider the standards from the standpoint of the needs of urban and rural communities. The executive committee of the American Public Health Association could keep in touch with the progress of the various special committees and render such aid as possible and be responsible for presenting this subject as committee reports, with information accumulated and recommendations for the consideration at an annual meeting, at which time a committee can be appointed to mould and formulate the various committee reports in shape to present as completed standards to the section on Child Hygiene; to be referred to the association for approval and adoption.

SCHOOL HYGIENE FOR RURAL COMMUNITIES

GRACE WHITFORD, M.D.,

Former Director, Bureau Child Welfare, Florida State Board of Health, Ozona, Fla.

Read before Special Meetings on Child Hygiene, American Public Health Association, at New Orleans, La., October 28, 1919.

An opportunity for the rural school child equal to that of his city brother is the text of this article. Interest the parents by making the schoolhouse the community center. They will then realize what it stands for. Rest rooms are needed and playgrounds and the general development of the spirit of play, together with medical inspection and regular physical exercise.

THE problem of hygiene for rural schools naturally divides itself into a consideration of the school building, its construction, situation, sanitation, proper room space, illumination, ventilation, heating, general attractiveness; the surroundings of the school; its equipment; possibilities of giving proper care to the children during school hours; a program for physical inspection and supervision of the children by trained workers, and educational work in personal and general hygiene which will radiate from the school into the home.

We will assume that the school is the one common center for the rural community; if not, it should be made to become such a center. It should become the true community home, especially in neighborhoods of scattered population. To achieve any constructive health program for the school and its children, the people themselves must feel this. It must be their school with the knowledge that all that goes into it and comes to their homes from it is theirs, put there by them. They must be made active participants, real principals, in any hygiene work introduced.

Country school housing conditions have improved markedly in the last decade. Whole countries, North, East, South, West have built schools for every district. However, though the buildings may be new and even presentable in appearance, many of them retain the faults of construction of the "little red school house." They are often placed in a bad situation, demanding impossible sewerage and water supply systems; lighting has not been studied and is apt to be as glaring in arrangement as that of the former was dim; ventilation too often consists of drafts, and heating systems are frequently utterly inadequate, if, indeed, they have been installed at all, for many a school builder who serves as his own architect puts the heating plant in as an afterthought when the structure itself is complete. The site selected is too frequently that cramped space donated by a trustee who is more concerned over enhancing the value of his adjoining property than over the welfare of his children.

In building, it is well to impress upon the community that the school is the only attractive place some of the children know, and that it is as cheap to build what is pleasing to the eye as the ugly.

As yet, in many rural schools, even those soundly built, one finds the inadjustable desk and seats made to stretch the legs of the short and cramp those of the long, to make the child conform to the furniture, since he is of more plastic material than wood or metal. They still have the glaring surfaced "blackboards," powdering chalk,

old type erasers, unshaded or incorrectly shaded windows.

Since definite standards for school building and furnishing have been maintained for years, it seems strange that old mistakes continue to be repeated. The neghborhood points proudly to a more sightly new structure that is basically as poor as the old. There should be some definite plan for issuing permits for rural school buildings, making obligatory established standards. The cost would probably be less than for those not so planned. Buildings should provide for the inevitable increase in school population; with the whip of compulsory education, particularly in the South, the overcrowding of the children is appalling. The consolidated school, most noticeably in the South, where severe winters are not to be reckoned with, has solved many a problem in school hygiene for the community. Not only does it afford better educational advantages, but better sanitary conditions, since it is large enough to warrant, in the eyes of the local school board, some sort of sewerage and water system. However, it brings problems of its own: it makes long hours for the children, especially the little ones, for a rest room is seldom provided for them. If a child becomes ill, there is no place for him to lie down, nor, unless he is ill enough to warrant sending for a conveyance, can he go home until the entire school is dismissed at the end of the day. The vehicle which gathers up the children, some from considerable distances, is apt to be an overcrowded makeshift, with scant means for protecting the children from wind and weather. Many a child sits in school all day wet from his morning's ride in the school 'bus. Some boards, of course, provide suitable motor 'busses with easily adjustable windows. Practically all of them, however, are overcrowded and this close contact must be a frequent source of contagion.

Not only should there be a place in the school outside of the regular classrooms for the care of the child, but outside of the building there must be the place for the child's time of recess and relaxation. When air and sunlight are two of the few inexpensive things to be obtained nowadays, is it not strange that rural children are given so little along with their school life? Ground space, too, is not yet sold by the inch in the country, nor in the average town of a population of ten thousand or less inhabitants. Yet, in small towns, the school with adequate playground space is the exception, even in the country, the school-house surrounded by enough cleared and cared for space sufficient for all of the children to play games in at the same time, is the exception of only rarer frequency. Perhaps it is not so apparent to the casual onlooker because so few of the children do play games together. The small number of active ones are the participants, the larger number the "watchers" in almost every school yard. It is not only because the average country child does not know how to play, but because in addition he is too inert to want to; undoubtedly a symptom of the high percentage of malnutrition found among our children, or, in the South, of hookworm disease. The school built on the Spanish bungalow type (one-room units enclosing a patio) gives an ideal playground for small towns and country districts where the teaching force is small and there cannot be a trained playground supervisor, and the grade teachers themselves must supervise recess periods. Given recreation space, the next consideration is to secure for the children, not special coaching for the few, but physical training for all. Many counties have solved the problem by employing a graduate of an established school for physical education to supervise the work of the entire county, the teachers themselves doing the daily work. Such a supervisor can do a great deal in the physical inspection of the children as well. Because of the lack of funds and the scarcity of such

teachers, many schools are without physical training for the children. The fortunate school is the one with the grade teachers trained properly along this line as part of their education for their profession. Such schools in the country are, alas, few. There are many college girls who have been well trained athletically who come back home without definite work to do who could be engaged for part time and who could do volunteer service as part of their share in the health program of their counties. Everyone who has learned to do a definite, useful thing should be made to pay for such training by giving some of the fruits of it back to the community. This is a definite piece of work that can be given to a young woman or a group of young women of the county. We must not allow our trained girls to rust for want of presenting them with a concrete "job." Most of them welcome the opportunity for service. Simple playground equipment can be put in the school yard by community effort, if the school board cannot supply it. Many potential tendencies are developed into actual diseases among our children from want of breathing and postural exercises. Any intelligent teacher should be able to put her children through "setting up" exercises daily and should be required to do so if other means are not supplied. All such work should be in the open as much as possible. To me it is of serious import when our children do not know how to breathe, sit, or walk correctly, and have no desire for play, as play, indeed, have no the healthy animal's impulse to exercise his muscles.

There is no longer a question mark after the necessity for physical inspection and supervision of all classes of school children. The war has brought the question of man-power and its lack through neglect in the present generation too forcibly before the eyes of the average voter to make necessary any lengthy educational campaign to have him approve this one form of public health work. It appeals to the average man almost as much as the extensive use of state and federal funds for venereal disease control. In fact, his intelligence on the subject seems to have outstripped that of some of the public health officials. Herein lies the hope of the extension of this type of basically constructive public health work for the professional politician counts votes, not issues, and permits or allows to exist what the voter demands. Rural communities need organized physical inspection of their school children more than the urban. A thorough yearly examination of each pupil by a trained inspector should be the minimum requirement. Daily inspection in addition is the ideal. There should be a sufficient nursing force for family visiting, case work, "follow-up" work, social service and regular visits to the school. While most of this work seems too great at first consideration for many counties, and it is usually practical to take the county as a unit, it can be shown that through communicable disease control and prevention, checking of potential defects, correction of corrigible defects, raising of the general physical standard, classification of irremediable defects (and the direction of children so affected into proper channels for care and education) it gives the greatest interest on the least capital invested of any type of public health work. The school is practically the only organization we have in which large numbers of children are gathered into groups; therefore, much of the expense of organization work necessary in other types of child welfare work is eliminated. School boards become interested when the number of days of school saved in the year per child and the lessened average number of years to a grade per child are cited. That is the concrete thing that everyone can understand.

When we consider that twenty to forty per cent of those graduating from the grades are practically unfit physically; that sixty per cent of the children of

every community, regardless of birth, breeding, wealth, or geographic location have physical defects needing skilled care, we must realize that our educational system has been builded upon the shifting sands, indeed, when the physical has been ignored. It is passing strange that in autocracy or democracy, the children of Judy O'Grady and the Colonel's Lady grade about the same.

If it is necessary to have health education and physical inspection of masses of adults in camps, how much more necessary is it to have both for immature humanity massed compulsorily in schools?

How the work of physical inspection is done must largely depend upon the finances and needs of the district and the amount of interest aroused in the people. Periodic physical inspection without a nursing system is almost devoid of good, particularly in rural communities. Indeed, if it is a question of the two, the nursing system should be the one installed rather than the medical. Dr. Thomas A. Wood says, "In rural districts, school examinations may often be advantageously done by the school nurse with the help of the teacher." I have seen it unquestionably proved.

Physical inspection should serve as the beginning of many other phases: in fact, should be the opening wedge of other activities. If these activities are to be successful, the nurses must be socially as well as institutionally trained. The school work may, through home visiting, become the opening wedge for pre-natal and pre-school age work. It is often the beginning of an awakening of an interest in personal hygiene and home sanitation in the children, and the cause of both being taught in the school. It may also be the beginning of the teaching of proper diet and food habits and through the children's interest, the beginning of the mothers'. I have seen the mothers of several country communities band together with the teachers in Parent-Teachers' associations, furnishing hot lunches in the schools for the children. In these cases, better dietary habits have been followed at the home when the weighing and measuring of the children showed to parents the degree of malnutrition that had been reached. I have seen whole classes of country school children double their chest expansion in a year, having demanded physical exercises daily after their first physical inspection. I have seen proper sanitary arrangements installed through the insistence of the children of the family after they had learned of hookworm disease, its results, and prevention, a whole corps of sanitary men could have grown gray before the householders would have heeded it. As quickly, children can be taught to grasp communicable disease prevention. With all adults, knowledge far outstrips practice, but children are literal-minded creatures and act instinctively upon what they learn if the lessons are practical and vivid. Herein is the hope for home sanitation and raising of the family's living standard. The possibilities are boundless. The parent must be drawn into these school activities. Associations, which exist today even in remote country districts, volunteer workers, trained through the Red Cross classes and other organizations, should be given definite pieces of work in the health program.

There still remain the children in need of special care, which is difficult to provide in rural districts. For the pre-tuberculosis, the tuberculous, the markedly malnourished, the hopelessly crippled and the mental defective, there is seldom a place save in the grade school.

But the impetus for new things in school hygiene in rural communities has started; in certain sections, it is outstripping that of the cities. The country people themselves are awakening to the disadvantages under which their children are growing up, they are asking for them in matters of health an "equality of opportunity." To provide this quickly and economically, a national program for rural school hygiene should be laid down.

SOME IMPORTANT FACTORS IN THE PREPARATION OF CULTURE MEDIA

LEWIS DAVIS,

Research Laboratory, Parke, Davis & Co.,

Detroit, Mich.

Read before Laboratory Section, American Public Health Association at New Orleans, La., October 30, 1919.

This investigator favors the steam pressure method of sterilization. High temperatures can effect undesirable chemical changes, while long continued heating may be destructive to food accessory factors. Emphasis is laid on the proper selection of bacteriologic peptone.

The importance of placing the preparation of bacteriologic culture media on an accurate, scientific basis, has long been recognized. The fact that a majority of the pathogenic microörganisms has similar food requirements makes such a step especially desirable. In spite of numerous attempts to formulate procedures striving towards uniformity, substantial progress in this direction has been slow. While it is aimed to record the biological characteristics of an organism with more or less precision, one of the most essential requirements, that of a proper cultural environment is, in most cases, left in a state of uncertainty.

Very frequently, failure to obtain some important biochemical reaction, toxicogenicity, or even growth with an organism, is explained as an individual idiosyncrasy. As a matter of fact, the cause may be readily apparent when examination is made of the bacterial food or the method of its manufacture. It is the purpose of this paper to discuss some of the factors concerned in the preparation of culture media, with particular reference to the nutritive and toxicogenic requirements of the more common pathogenic organisms.

Urgent attention recently directed toward bacteriologic peptone by reason of the actual need for a domestic supply has shown that proper selection of this important culture medium constituent is imperative. It will be readily conceded that for the simple cultivation of many organisms, ordinary beef infusion or even beef extract is able to furnish all of the necessary food constituents. In fact, Davis and Ferry[1] have succeeded in obtaining growth of the highly susceptible *B. diphtheriæ* in a medium consisting entirely of an aqueous solution of amino acids, purine bases and mineral salts. For the more complex requirements, however, such as production of toxins or even in the growth of delicate organisms, bacteriologic peptone plays a specific role by supplying the essential accessory factors in the form of easily assimilated, hydrolyzed protein. As stated in a previous investigation by Davis,[2] whch led to the development of a satisfactory bacteriologic peptone, the value of this product in bacterial nutrition is governed entirely by the presence of amino acids and other components which can be utilized by the bacteria. While some of these basic constituents are absolutely necessary for the maintenance of bacterial life and development, others in turn will be utilized, if present, for the production of toxins or certain by-products not essential to metabolism. Not only should a biologically utilizable peptone have the proper com-

position, but these amino acids and other components should be present in the most available form. Extended, comparative studies have also indicated that, among other factors, a peptone hydrolyzed to a much greater degree than the formerly imported product, possesses increased nutritive values.

The superiority of beef infusion over beef extract for the cultivation of pathogenic bacteria and particularly for the devlopment of toxins is generally admitted. The method formerly recommended in infusing the meat for 24 hours in the refrigerator with distilled water is practical only on a small scale. For operations involving large quantities of infusion, an equivalent, satisfactory product can be obtained by bringing the meat and requisite quantity of water to the boiling point in the course of an hour and a half and then expressing the liquid through flannel in a suitable press.

Regardless of which method is employed to prepare the infusion, fat should be removed as thoroughly as possible. Even the presence of small quantities is undesirable in the final broth to be employed in the production of diphtheria toxin or the propagation of certain surface growing organisms, *B. tuberculosis*, for example. Experience in the routine production of diphtheria toxin, observations on which will be communicated in a later article, has shown that a marked diminution in the elaboration of toxin occurs in those flasks of bouillon containing only traces of fat. I am inclined to agree with the opinion of Larson, Cantwell, and Hartzell[3] regarding the influence of the surface tension of media on the growth of bacteria. It is very probable that this deleterious action of the fat is exterted by depressing the surface tension of the medium. This would cause *B. diphtheriæ* to grow beneath the surface with consequent decrease of pellicle and toxin formation.

One of the most important steps in the preparation of culture media is undoubtedly the adjustment of the reaction, which establishes the optimum concentration of H ions for bacterial growth and metabolism. In spite of the numerous and convincing data brought forward within the past few years to prove the fallacy of the "hot titration" method, this inaccurate procedure is still common practice. As is known, the committee of this association clearly states in the Bacteriological Section of the Revised Standard Methods for the Examination of Water and Sewage,[4] "that a new method of titrating and adjusting the reaction of culture media which will give a more accurate indication of the hydrogen ion concentration is desirable." The colorimetric determination of hydrogen ion concentration as proposed by Sörensen,[5] Walpole[6] and more recently by Clark and Lubs,[7] offers a rapid and reliable method for ordinary, bacteriologic, laboratory requirements. Estimations demanding greater accuracy should be carried out by the electrometric method. With the simple electrode recommended by Bovie[8] and the direct reading ionometer of Bartell,[9] the hydogen ion concentration can be rapidly determined by the accurate gas chain method. A description of the "set up" required for such measurements is given in a previous article on hydrogen ion concentration determinations with diphtheria toxin (Davis).[10]

For a large number of pathogenic species including Bact. diphtheriæ, and the more delicate micrococci, we have observed that reactions of the sterilized medium ranging between P_H=8.0 and P_H=8.3 (C_H=1.0×10^{-8} and C_H=5.0×10^{-9}) give very satisfactory results. The general procedure given below, which employs the colorimetric method for checking the reaction, is followed with such modifications as will be subsequently discussed.

A. Add the peptone and salt as required to the fat-free infusion. Agitate thoroughly and heat for 15 minutes in

streaming steam or bring to a boil to ensure thorough solution. Sugars for carbohydrate media should not be added at this point, but just before sterilization.

B. Remove exactly 10 cc. of the broth from A to a small (preferably 100 cc.) Erlenmeyer flask. Dilute with about 40 cc. of cold, distilled water, and add 0.5 cc. of a 1 per cent solution of phenolphthalein (in 95 per cent alcohol) as indicator. Titrate to a deep pink color against an N/10 NaOH solution, freshly prepared, when required, as an exact 1/100 dilution of a stock 10 N solution. The burette reading gives directly the amount of the strong (10 N) solution required to neutralize per liter of medium. Steam again for 15 minutes or bring to a boil, and estimate the hydrogen ion concentration.

C. For determining the actual hydrogen ion concentration, the simple "comparator" of Hurwitz, Meyer and Ostenberg[11] is employed, with standardized boric acid-potassium chloride-sodium hydroxide mixtures of PH=8.0, PH=8.2, and PH=8.4, prepared as directed by Clark and Lubs.[7] Flat bottomed test tubes, 17 mm. in diameter, of uniform bore, and with capacity of about 30 cc. have been found satisfactory for comparison purposes. Transfer exactly 10 cc. of the neutralized bouillon from B to one of the comparison tubes, dilute with 10 cc. of distilled water, and mix well. Remove 10 cc. of the mixture to another tube and add 0.5 cc. of an 0.02 per cent solution of phenol sulphonephthalein in 50 per cent alcohol. Prepare three other tubes containing 10 cc. respectively of the standardized PH=8.0, PH=8.2, and PH=8.4 mixtures with 0.5 cc. of the phenolsulphonephthalein solution in each tube. The comparison technique is that described by Clark and Lubs.[7]

As a rule, the value will very closely approximate PH=8.2. In the few cases where the color in the tube containing medium plus indicator is lighter than that of the compensated PH=8.0 standard, N/10 NaOH can be run directly into the former tube until the desired tint is reached. Since the equivalent of 5 cc. of the medium is employed, twice the burette reading gives the amount of 10/N NaOH necessary to correct each litre of broth.

Media which are to contain sugars must be adjusted to a higher value than PH=8.2 before sterilization to anticipate the increase in the concentration of hydrogen ions as a result of sterilization. Where the amount of carbohydrate to be subsequently incorporated is small, this may be accomplished by titrating to a deeper shade with phenolphthalein in the preliminary adjustment, and then standardizing to a final PH value greater than PH=8.2. As an instance, broth for the cultivation of the influenza bacillus, which has among other ingredients, 0.2 per cent of dextrose, should have a reaction coming within the narrow limits of PH=8.1 to PH=8.2. By adjusting to PH=8.3, as above, the desired value is attained after sterilization.

When the medium is finally to have present a larger amount of sugar, the consequently greater increase in H ion concentration makes a different indicator than phenolphthalein necessary for the preliminary titration. The 2 per cent dextrose bouillon employed for toxin elaboration with *B. tetani* furnishes a good example. Experimentation has shown that in order to obtain the final optimum reaction value of PH=8.0 to PH=8.2, after sterilization, the broth before addition of the glucose must be adjusted to a PH value of 8.6. This is easily accomplished by using 0.5 cc. of the .04 per cent solution of thymol sulfon phthalein recommended by Clark and Lubs,[7] as the indicator in the preliminary titration and adding the N/10 NaOH solution to a blue shade. Color comparison of the adjusted medium is then made in the usual manner with a standardized PH=8.6 mixture, by using 0.5 cc. of an 0.02 per cent solution of ortho cresol sulphon phthalein indicator for

both standard and broth, in place of phenol sulfon phthalein, as before. This is due to the fact that the range within which phenol sulfonphthalein is useful lies between PH=6.8 to PH=8.4.

The acid phosphate-glycerin bouillon recommended for the cultivation of *B. tuberculosis* is of interest in this connection. Preliminary cultivation experiments indicated that maximum growth of the organism can be obtained if the medium before sterilization has a hydrogen ion concentration equivalent to PH=7.2. Using the hydrogen electrode for the "exploratory" work, a routine procedure was soon established. In this case, the preliminary titration is carried out according to the usual technique, to a deep pink shade with 0.5 cc. of the 0.02 per cent solution of phenol sulfonphthalein as indicator. The H ion concentration of the adjusted and steamed medium is now determined colorimetrically in the "comparator" with standardized KH_2PO_4—NaOH mixture of PH=7.0 and PH=7.2 (Clark and Lubs).[7] Very satisfactory color comparisons are obtained by adding 0.5 cc. of an 0.04 per cent solution of dibromthymolsulfonphthalein to the tubes containing both the broth and standards.

Solid media can be adjusted to definite H ion concentrations with no special difficulty. As has been pointed out by Clark and Lubs,[7] pure agar has practically no buffer effect in those ranges of reaction where it is usually employed, and its addition to an adjusted bouillon should have no appreciable effect on the hydrogen ion concentration of the latter. Agar, like sugars, can be incorporated in a medium just before sterilization. Since gelatin remains fluid at moderate temperatures, it can be added when necessary before the bouillon is adjusted. Serum, spinal fluid and other exudates which already possess an optimum H ion concentration should be added to media only after the reaction adjustment has been made.

A factor most frequently neglected in the preparation of culture media is proper sterilization. Theoretically, filtration through unglazed porcelain would would be an ideal method for sterilizing culture media. On a practical scale, however, recourse must be had to some form of heat, generally flowing steam, or steam under pressure, as in the autoclave. As would be expected, the use of too high a temperature for this purpose can effect chemical changes in a medium which seriously impair its value for bacterial food. This is especially true where sugars or other carbohydrates are present, due to possible cleavages which may take place, particularly in alkaline solution.

Prolonged heating even at temperatures otherwise harmless should be equally avoided. This is especially of importance in the production of large quantities of media in bulk containers where a longer heating period is required to ensure sufficient heat penetration. A long distance recording thermometer of accepted type, which may be inserted directly in the liquid, will materially assist in determining the actual temperature. Contrary to the usually accepted belief, it appears that the deleterious action in this case is not due so much to a final increase in H ion concentration, as to a possible destruction in the medium of food hormones, probably of a vitamine character. The alkaline reaction generally present would also render these compounds more unstable. Experimentation in progress on the role of food accessory factors in the nutrition of *B. diphtheriæ*, which will be reported upon in a subsequent article, appears to substantiate this belief.

In general, even with sugar media, autoclave heating at a temperature not exceeding 120 degrees C. and for a period not more than 30 minutes, has been found to give a more satisfactory microbial food than intermittent sterilization in flowing steam. Media having a supernatant layer of oil for production of

anaërobiosis are preferably sterilized by the intermittent method. This avoids the danger of boiling over so frequently encountered when such media are heated by steam under pressure. Actual electrometric determinations of the same medium sterilized by both methods shows less increase in the H ion concentration of the final product of autoclave sterilization. Where a biological index is possible, as in the production of toxins, the intermittent method is more likely to give weaker products.

SUMMARY.

Culture media preparation is discussed with special reference to the requirements of the more common pathogenic microörganisms. Importance is placed upon the proper selection of bacteriologic peptone. The value of this product in bacterial nutrition is governed entirely by the presence of amino acids and other components in a form utilizable by bacteria.

The presence of small quantities of fat in beef infusion has a deleterious action which is ascribed to a probable depression of the surface tension in the medium.

Hydrogen ion concentration of culture media is discussed with special reference to the colorimetric method of determination. A general procedure is outlined showing the application of this method and the modifications which are necessary in special cases of acid and alkaline media.

Comparison of sterilization procedures favors the steam pressure method. High sterilization temperatures can effect chemical changes in a medium, while prolonged heating even at safe temperatures may have a destructive action on the food accessory factors present.

REFERENCES.

1 Davis & Ferry: Jour. Bact., 1919, iv, 217.
2. Davis: Jour. Lab. and Clin. Med., 1917, iii, 75.
3. Larson, Cantwell, and Hartzell: Jour. Infect. Dis., 1919, xxv, 41.
4. Standard Methods of Water Analysis, A. P. H. A., 1917, 94.
5. Sörensen: Ergebn. Physiol., 1912, xii, 393.
6. Walpole: Biochem. Jour., 1914, viii, 628. Jour. Chem. Soc., 1914, cv, 2501.
7. Clark and Lubs: Jour. Bact., 1917, ii, 1, 109, 191.
8. Bovie: Jour. Med. Research, 1915, xxxiii, 295.
9. Bartell: Jour. Am., Chem. Soc., 1917, xxxix, 4, 630.
10. Davis: Jour. Lab. and Clin. Med., iii, 358.
11. Hurwitz, Meyer and Ostenberg: Bull. Johns Hopkins Hospital, 1916, xxvii, 16.

□

Acute Encephalo-myelitis.—The investigation which the authors report concerns an epidemic disease prevalent in certain parts of New South Wales during the summer of 1917 and 1918 which at first was thought to be acute poliomyelitis. The disease in question, however, shows important discrepancies both in its symptomatology and histological picture. An extensive series of experiments was undertaken using monkeys, sheep, calves, dogs and guinea pigs. The results indicate that the disease is an acute encephalo-myelitis akin to but not identical with that of acute poliomyelitis. The disease was rapidly communicated with fatal results to monkeys by intracerebral inoculation of an emulsion of nervous substance (brain, cerebellum, pons, medulla, spinal cord) from a human subject dead from the disease. The disease was also communicated (intracerebrally) from monkey to sheep, from sheep back to monkey and on again from monkey to monkey. In the case of the sheep there was a failure to induce the disease by swabbing the nostrils with virus containing emulsion. The virus is held back by filtering through a Berkefeld filter.—J. B. Cleland and A. W. Campbell, Jour of Hygiene, Oct. 1919, 272-316. (*D. G.*)

HEALTH HAZARDS OF THE DYE INDUSTRY

A. K. Smith, M.D.,

Medical Director, E. I. du Pont de Nemours & Co., Wilmington, Del.

Read before Section on Industrial Hygiene, American Public Health Association, at New Orleans, La., October 29, 1919.

The first step in prevention of poisoning in the dye industry includes well-ventilated, properly equipped buildings. Selection of workmen is important and the use of the best methods in manufacturing. These investigations, which are based on 2,500 employees, whose blood was tested periodically, yield some minor diagnostic material.

The hazards of the dye industry are those connected with any industry plus the poisonous chemicals necessarily handled in the production of dye stuffs.

Prior to 1917 the making of aniline products in this country for use as dye stuffs amounted to next to nothing. Our company had, however, been making aniline products since 1907, and in no inconsiderable quantities, for use as explosives; so that while the dye industry is fairly new to us, the nature of aniline and a number of its allied products is fairly familiar.

The first hazard we meet in the dye industry is from strong acids, such as nitric and sulphuric or a mixture of these two known as mixed acid. These are used to nitrate the benzine or toluene, etc. Their destructiveness to the human tissues is well known and every precaution is taken to prevent these acids from getting on the skin of the workmen. When acid does get on the workman he quickly knows it by the pain it causes, and he immediately drowns it with water and seeks a soothing dressing for his burn.

Nitrous fumes may also be considered under this hazard and are the reddish brown fumes, nitric peroxide, together with some finely atomized acid. Exposure to these fumes must be considered in the nature of an accident and occurs as the result of a nitrator fire or a large spill. Their effects are those of an irritant to the mucous membrane of the respiratory tract and they may cause anything from slight bronchial irritation to a fatal pulmonary edema.

The second hazard we meet with in the dye industry is from the products formed by the action of mixed acid on the benzene series of hydrocarbons, namely; benzene, toluene, xylene, mesitylene, cymene and hexa-methyl-benzene, forming the compounds known as the nitro aromatics, and also the hydrocarbons, napthalene and anthracene and derivatives from these.

A typical nitro compound is mono-nitro-benzene, and a typical amido compound is aniline which is made from mono-nitro-benzene by treatment with nascent hydrogen.

There are an amazing number of these nitro and amido compounds and a description of each individual compound would be impossible at this time. It is their general character we are after and this depends largely on their physical properties, their solubility and molecular instability.

Some are clingy, oily liquids, others quite insoluble solids and from the adherent, thin, easily absorbable compounds we expect quicker poisoning than from the more stable less soluble solids.

On ingestion any of these compounds may do serious harm. It is more their effects by absorption through the skin and the inhalation of fumes that concern us in the dye industry.

When aniline or aniline oil gets on the skin or clothes no immediate pain is noticed but the workman must be trained to have it removed quite as quickly as he would the strong mineral acid; otherwise he will later have the headache, giddiness, flushed face, rapid heart action, nausea and cyanosis due to its poisonous effects.

At one of our plants where from 2500 to 3000 men are employed and between 90 and 100 different dyes are produced, there were 114 cases of aniline poisoning in the past six months. It is quite often difficult to fasten the poisoning to any particular chemical, as very often there are many different chemical compounds in the course of handling in the same area. It is for this reason we give the main product of an area credit for producing the poisoning unless its origin is definitely known. Of these 114 cases di-nitro-benzol is credited with 29; ortho and para toluidine 22; diamine 19; phenyl glycin 16; magenta and rosaniline colors 11; napthalene intermediates 6; auramine 5; azo colors 5; and dry mixing and grinding house 1. Some of these materials are fairly harmless, such as phenyl glycin, but aniline oil is used in its preparation and that accounts for the cases. Mono-nitro-benzol is not credited with any cases, and that is simply because it has not caused us any trouble at these works.

Some nitro and amido compounds are exceedingly irritating to the skin, such as para-nitro-aniline, tetra-nitro-methyl-aniline and di-nitro-chlor-benzol. Even the fumes of di-nitro-chlor-benzol can cause a dermatitis. These chemical inflammations of the skin closely resemble the dermatitis caused by poison oak or ivy and are readily amenable to treatment. Some workmen can work in a compound, notoriously irritating to the skin, month after month and suffer no skin inflammation, while other workmen handling the same compound will show an active dermatitis in twenty-four hours. Workmen with such sensitive skins should be permanently removed from contact with such irritants. The skin of an habitual drinker of alcoholic liquor becomes easily inflamed on exposure to these chemicals.

For a time periodic blood examinations were carried on at intervals of two weeks and many thousands of these examinations were made. The results of these examinations showed no great departure from normal, but there was a slight increase in the number of small lymphocytes, a small increase in the number of transitionals, and a slight increase in the number of eosinophiles. Such changes were only found in those workmen who had been exposed to nitro or amido compounds for a period of four or five weeks or longer. In acute cases there is a diminution in the amount of hemoglobin and a formation of methemoglobin.

The earliest symptoms we get in the workmen are headaches, giddiness and a "down and out feeling," as the men describe it, and then upon careful examination a certain amount of cyanosis will be discovered. He is then given an acetic acid bath which is vigorously done by an attendant and sufficient liquid is used to wash away all of the offending chemical; then he is given an effervescent saline laxative and put to bed. Rest and fresh air are very essential in the treatment. If stimulation is needed we use camphor in oil and avoid the use of alcohol. Milk has been found to be useful in these cases, serving as food and a diuretic at the same time. Examination of the urine shows it to be cloudy but without any other change, and the clearing of the urine is taken by our hospital doctors as a guide to the patient's condition. We have had no fatalities from aniline or its allied compounds due to poisoning and we have

had no chronic cases of aniline poisoning unless the slight blood changes noted before and which cause no other symptoms may be considered chronic cases. Usually the acute cases which we have recover in a few hours to three days.

There are perhaps a number of other chemicals used in the production of dyes which should be classed as hazards, such as cyanogen and phosgene or carbonyl chlorid. Any trouble from these compounds, whose effects are well known, can only come about through an accident to their containers, and the dye worker is not exposed to them under ordinary conditions. It is important to keep under observation for at least twenty-four hours any workman who has been exposed to phosgene gas.

Properly equipped buildings, well ventilated, and constant improvement in the methods of production and handling, together with proper selection and care of the workmen will reduce the hazards in the dye industry to those of any other industry. Even at the present time when the dye industry in this country may be said to be in its infancy, and when large numbers of new dyes are being constantly produced, no great difficulties are being experienced, a condition which we attribute to constant care, supervision, and improvement in our methods.

□

Tuberculosis Agencies.—It has been found after long experience that efforts directed principally against infection itself in tuberculosis have not been as successful as was hoped might be the case. We are realizing that there are other lines of attack in the combat against tuberculosis quite as important as the direct one. We must strike on the flanks of the enemy as well as on the front, and we need the forces of Boards of Health, the Red Cross, the public health nurse, the school physician, the social worker, the visiting nurse, and all the various agencies which have to do with industrial conditions, housing occupational diseases, and factory hygiene, for our combined attack.

The special task for the tuberculosis association or worker is outlined in the following program:

1. To search out in every community each case of tuberculosis and to see that it is properly disposed of.

2. To afford the local physician opportunity for a diagnosis of his suspected cases, either through a tuberculosis dispensary or a tuberculosis expert.

3. To educate the community on the importance of the prevention of tuberculosis and to promote wise legislation.

4. To persuade employers of labor as to the economic value of having their employes periodically examined for tuberculosis, to provide means for these examinations and to urge all other organizations to do the same.

5. To urge the importance of having all school children thoroughly examined each year for tuberculosis.

6. To see that provision is made in sanatoria and hospitals for those suffering from active tuberculosis and for children with latent tuberculosis, as well as open-air schools or fresh-air classes for pre-tubercular children.

7. To follow up discharged cases from these sanatoria so as to prevent relapses.

8. To do what we can to provide suitable occupation or proper hygienic conditions under which the arrested case can follow out his original vocation.

9. To provide well-trained visiting nurses or social workers to supervise and keep in touch with those consumptives, who for some reason remain at home.—E. O. Otis, *Jour. of Mass. Tuberculosis League*, Dec. 1919. (*D. G.*)

A Stronger A. P. H. A. Means More Help to You. Do Your Bit.

EDITORIAL SECTION

AMERICAN JOURNAL OF PUBLIC HEALTH

EDITORIAL OFFICE: 169 MASSACHUSETTS AVE., BOSTON, MASS.

A. W. HEDRICH, C. P. H., Editor J. RITCHIE, Jr., Associate Editor

Editorial Assistants

E. R. HAYHURST, M.D. DAVID GREENBERG JAMES A. TOBEY
R. P. ALBAUGH, M.D. M. P. HORWOOD, M.S. FRANCIS H. SLACK, M.D.
E. B. STARR, M.D. P. M. HOLMES, M.D. JAMES M. STRANG

Board of Advisory Editors

PETER H. BRYCE, M.D., Ottawa, Canada PROF. M. J. ROSENAU, Boston, Mass.
CHARLES V. CHAPIN, M.D., Providence, R. I. PROF. W. T. SEDGWICK, Cambridge, Mass.
EUGENE R. KELLEY, M.D., Boston, Mass. PROF. GEORGE C. WHIPPLE, Cambridge, Mass.
W. A. EVANS, M.D., Chicago, Ill. PROF. S. M. GUNN, Paris, France.

All expressions of opinion and all statements of supposed facts are published on authority of the writer under whose name they appear, and are not to be regarded as expressing the views of the American Public Health Association, unless such statements or opinions have been adopted by vote of the Association.

NOTICE TO SUBSCRIBERS: Subscription Price, payable in advance, $4.00 per year for United States and possessions; $4.50 for Canada and other foreign countries. Single copies, 50 cents postpaid. **Membership** in the American Public Health Association, including subscription to Journal, $5.00 per year. **In Change of Address** please give both old and new address, and mail before the tenth of the month to take effect with the current issue. **Mailing Date,** 5th of each month. **Advertisements** accepted only when commendable, and worth while both to reader and advertiser. **News Items,** interesting clippings and illustrations are gladly received, together with name of sender. **Copyright, 1919, by A. W. Hedrich.**

AN AFTERMATH OF THE WAR.

The armies of the combatants in the recent war have offered the greatest clearing house for infections that the world has ever seen. Gatherings of pilgrims at religious shrines and the great fairs of India and other countries have been marked by the public health administrator as dangerous through their possible agencies in the interchange of disease, and before the war serious effort was made in Hindustan to lessen the risks by discouraging the gatherings. The war against Germany has presented similar dangers, but on a much vaster scale. In the pilgrimage centers and at the fairs, the people of the same or of kindred countries exchanged maladies with which they were more or less accustomed. In the war every soldier ran the potential risk of infection with any of the world's whole category of communicable diseases. The risk was increased by absence of natural immunity to foreign diseases, but a factor of comparative safety lay in the control and watchfulness of the army medical corps. So close a concentration of all the kinds of communicable diseases in the world presents opportunities for distribution as the demobilized troops return to their home countries and the routes are again opened to travelers and emigrants. This is the reason why Switzerland meets with suspicion and with a quarantine the demobilized soldier who seeks to cross her frontier; it is the reason that malaria, trench fever, dysentery and cerebro-spinal meningitis are receiving much attention at the hands and in the codes of British health administrators.

These facts should not be without their suggestions to public health officers in this country. There is no occasion for alarm, but much need for watchfulness. The best opinions in Europe and the United States counsel such watchfulness. There seems to be no feeling that any "epidemic following war" is to be feared, but care may be necessary and keen scrutiny of incoming strangers to prevent minor outbreaks.

Danger lies in the introduction into the country of carriers of disease who have acquired their germs abroad. No one knows precisely what virulence these microbes may present. There have been observations of imported cerebro-spinal meningitis that suggest unusual virulence. This is by no means a new story in the transmission of disease, for imported smallpox invariably results in fatalities. In Canada there has been noted a Gallipoli strain of dysentery. The disease is included in the list of the notifiable in only one-quarter of the States of the Union, and its spread may be unmarked, almost unnoticed; but it is a very important one in the armies of the Allies. It is necessary to keep it from our territory, the imported strain, since there may be potential risk to our people.

Such signals as these suggest the necessity for the highest standards of watchfulness at the ports of entry of the country, the most rigid quarantine; and on the part of state and local health officers, the closest attention to notification. While there is comparatively little to fear from the common infections through interstate transmission, because they are the kind already so well in hand, there should be the closest watch for any variations from regular forms of disease. It is the germ from abroad that is at the moment most important to guard against, for no one can predict what will be its course. The influenza epidemic emphasizes that fact.

In this country of easy transportation, health officials should now be on their guard against smallpox. The divided practice in vaccination leaves a number of endemic centres in North America in which it lurks, ready to invade other districts on the slightest relaxation of vigilance, or the barrier provided by a vaccinated community. Cases have been reported from a number of states, and local health officers should be, not alarmed, but forearmed and ready.

WHY NOT SANITARY SCHOOLHOUSES?

Contributors to the main articles in the JOURNAL this month have taken for their subject "School Hygiene." There seems to be no matter in the whole list of things that ought to be done in the interests of public health of more consequence than the sanitation of the schoolhouse. The first steps towards a sensible policy in this have not yet been taken in this country. The little boy who a few years ago asked his father, who was traveling with him on a train, why it was wicked to take a drink in one state and perfectly good form in the adjoining one, asked a difficult question. The same little boy could have overwhelmed his father with questions about the inconsistencies of the states in their schoolhouse legislation.

To quote one single item as a type of the whole system or lack of system; the fine schools of Rochester, N. Y., acknowledgedly exceedingly successful for their purpose in western New York, would be condemned as unfit for school uses in Vermont and in others of the States of the Union.

There is no one factor to health in the schoolhouse that is standardized. The problems of heating and ventilation have, in general, had no broad consideration; they are in the hands of the architect or the school committee, and may or may not be committed to some favorite in the business of heating and ventilation. The matter of illumination has received some attention from scientific investigators, but schoolhouses respond but indifferently to the standards.

The lavatories of schoolhouses in the principal cities of the country show no standards of space requirements, no standards of equipment, no standards of care. The rest room problem has been considered in a few instances, but no

definite requirements are made. The same is true of space for the fast developing medical and dental attention that communities are furnishing for their school children.

Schoolhouse planning construction has been and is today a matter of local option, and one does not here need to stop for proof of political influence. The architect is not infrequently a friend of the governing forces, and may have been interested in schoolhouses only through his reading. The contractor more frequently, even, is a citizen of the town; in many places it is a written or an unwritten requirement. In a small city such a man is likely to know little of the special needs of schoolhouses, but from just such men the city gets its building and equipment. One might be pardoned for thinking that in constructing buildings for the education of children, there would be required something in the way of special education of those responsible for the schoolhouses. This, however, has been even till now a forgotten or ignored method of procedure.

Realizing the chaos that exists in schoolhouse construction, under varying policies in the different states, some of which do not even provide standards of security to the scholars against fire, the National Education Association has entered upon a determination of minimum needs in the various factors to health and educational progress. It is a splendid and far-seeing piece of research, reports on which are already available in part. But it is high time for the health officer to come into co-operation with the N. E. A., and use his influence towards the establishment of proper health requirements in school building, places to which attendance is compulsory for one-third of the child's waking hours. In the campaign for the health of the child, there is hardly any more important movement than the reformation of the schoolhouse. This will require the plain statement of the case, the education of the parents and the establishment of a common sense basis for health legislation and regulations for schoolhouses. Every health agency in the country ought to be interested in an effort to make the schoolhouse a fit place in health and sanitation for the children on whom the future of the country must depend.

A SUCCESSFUL SCHOOL OF PUBLIC HEALTH.

Of Schools of Public Health there are many kinds, ranging all the way from that old-fashioned apprenticeship, in which a zealous pupil works with and under the immediate direction of a master, to those organized and maintained by universities, with fixed and extensive curricula and sessions covering one or more entire academic years. Some state health departments have an annual school lasting for a week or less and intended for the better information and special instruction of health officers in actual practice.

As a rule, the successful School of Public Health, like every other successful school, depends largely upon the personality of one or more of the instructors, and now and then we hear of one which owes its effectiveness to a single leader endowed with vision and enthusiasm and gifted with personal magnetism and the power of inspiration. Such a school is that conducted by Dr. Frederick W. Sears, Sanitary Supervisor of the State Board of Health of New York and Professor in the Medical School of Syracuse University.

In a recent issue we published an account of the Syracuse School prepared by Dr. Sears himself and lately given by invitation before the Harvard-Technology School of Public Health in Boston. We have it on the best authority that this school has been unusually successful and that those who have taken the various

courses and have reached the requisite standards have developed an enthusiasm for Public Health and obtained a practical knowledge of its problems and practice, which have redounded not only to their personal advantage but also to a marked improvement of Public Health Administration in the towns or districts under their care. It is to be noted that all of them were physicians or nurses not previously trained for Public Health work. W. T. S.

DR. HUGH SMITH CUMMING

The nomination by President Wilson of Dr. Hugh Smith Cumming as Surgeon General to the United States Public Health Service is especially significant as an expression of the development of public health within that Service. Commencing his career a quarter of a century ago in what was then the Marine Hospital Service, Dr. Cumming was in the forefront of the expansion under Surgeon General Wyman of national quarantine. This constituted a broad school in which he gained experience in various parts of the United States and in the Orient.

In the next great expansive movement, when by the recognition of sanitation, the Service became a truly Public Health Service Dr. Cumming was placed in charge of the investigation of the Potomac River and the Coastal Waters. It was in this work, by gathering around himself an efficient staff of specially trained sanitarians that he became recognized as one of the leaders in the field of Sanitation. With the outbreak of the War his services were requisitioned by the Navy to take charge of important health work which war activities made vitally necessary. His success in this work took him to Europe at the time provisions for embarking the huge American Army for return to the United States required assured methods to prevent the introduction into America of the numerous diseases that were afflicting war torn Europe. The remarkable feat accomplished in the return of 2,000,000 men who had been in intimate contact with the festering conglomeration of peoples from all parts of the globe, with all their heterogeneous diseases, without any detectable outbreaks in America bears testimony to the efficiency of the methods adopted.

While in Europe Dr. Cumming gained experience in all the public health activities throughout the Continent, and has been one of the leading American representatives in the important international Public Health Councils held in those countries. It is therefore logical that on his return to America, Dr. Cumming should be chosen leader of the great work in the Public Health Service which is developing so rapidly in this country. Sanitarians will welcome this recognition of the important progress which Sanitation has made in the field of Public Health.

CORRECTION

In the article in the January JOURNAL, "A Study of the Toxicity of Diphtheria Bacilli Isolated from Immediate Contacts," the statement appears: (Page 43, Col. 1, top) "In this particular instance only about 1 in 10,000 persons were potential sources of diphtheria infection when thrown in contact with non-infected persons."

Instead of "1 to 10,000" this should be "about 1 in 1,000."

BOOKS AND REPORTS REVIEWED

The Narcotic Drug Problem. *Ernest S. Bishop, M.D., F.A.C.P., New York: Macmillan Company. 1920. Pp 165. Price $1.50.*

To the readers of the AMERICAN JOURNAL OF PUBLIC HEALTH Dr. Bishop needs no introduction, for the reason that his papers on narcotic addiction disease have been presented at various recent meetings of the Association and have found place in the JOURNAL. They all focus on one important principle, that this addiction is a disease, that it should be treated as a disease, and that public opinion, the opinion of medical men in general and the usual attitude assumed towards the victims of the disease are fundamentally wrong, and so far as these have been the basis of legislation, that that is largely wrong too. It is a piece of missionary work to which Dr. Bishop has devoted himself, to undertake the education of the people, so that the wrong may be righted.

"The tendency and effect of legislative, administrative, police and penological activities in general," writes Dr. Bishop, "have been to place the sufferer from addiction-disease in the position of the criminal and vicious. The tendency of the psychologist and psychiatrist is to analyze him from the viewpoint of mental weakness, defect or degeneration, and to so classify and regard him....The addict himself, whose testimony has been all too little consulted or sought, will tell you that he is sick with some kind of physical condition which causes suffering and incapacity whenever a sufficient amount of narcotic is not administered."

"My present definition of narcotic drug addiction," continues Dr. Bishop, "is as follows; a definite physical disease condition, presenting constant and definite physical symptoms and signs, progressing through clean-cut clinical stages of development, explainable by a mechanism of body protection against the action of narcotic toxins."

Color, nationality, social or economic position, age, mental and moral attributes of whatever sort are no bar to the development of the condition. Judges on the bench, ministers in the pulpit, physicians, men in prominent positions, may be sufferers, while there are instances of record of addicted babies only a few hours old, born of addicted mothers.

As to origin, Dr. Bishop asserts that there is only one way to acquire the disease, namely through the continued administration of a drug that causes addiction. The details of their original administration vary, and a proportion of the cases must be charged to physicians in following customary opiate administration methods. "Unwisely prolonged opiate medication makes more opiate addicts than we have realized." The individual who is primarily normal, mentally, morally and physically, whose addiction condition is a result of ignorant, misguided or unavoidable medication, either professionally or self-administered, is worthy of study. The number of these is far greater than is generally appreciated. "They are social and economic assets whose interests we cannot ignore when we are considering the disposition and handling of the narcotic addict."

Dr. Bishop discusses the mechanism of addiction, the methods of treating victims of the disease, the rational handling of the disease, the laws and popular opinion. He notes that the discussion of the different methods employed in treating victims would require another volume, but briefly outlines the three broad principles underlying one or the other of them. Slow reduction and sudden withdrawal leave the patient subject to the physical torture which is the reason for their continuance as addicts, the latter process not infrequently ending in death. In the attempted cure by the substitution of other drugs, the substitutes are of such nature that it is difficult to attribute to them specific properties in an addiction disease.

With reference to the Harrison law, Dr. Bishop states that in its purpose and drafting it was a wise piece of legislation. "It sought to limit and control the use of opiate drugs and cocaine by making their possession and distribution illegal by other than those of professional and other status designated in the law, as qualified for their intelligent application and responsible distribution." The reaction within the medical profession was un-

fortunate, and instead of seeking to clarify the situation, the scientific men left the consideration and handling of the addict to lay officials.

These officials, unbacked by any knowledge that addiction is a disease, adopted the popular idea of degeneracy and criminality in the so-called "dope-fiends" and the immediate result was the cutting off of the supply to those to whom it was necessary. This action has resulted in the increase in illicit distribution of drugs. The dominant theme has been not that of therapy, but of "stamping out," and the honest physician who strove to meet the needs of his patient, an innocent addict, incurred the danger of severe criticism, possibly even jeopardy to his liberty under the interpretation of his acts as perpetuating a "habit."

This will call attention to some of the main points brought out by Dr. Bishop, who is calling for a reversal of public opinion in this matter through better information of the medical profession itself, which has in its ignorance of the real conditions, lent strength to the popular misapprehension. He is a disciple preaching the doctrine that "narcotic drug addicts are sick men who would be given medical treatment, and not criminals or degenerates who should be subjected to the drastic terms of the laws." He furnishes to the general reader a plain view of the subject, his volume has the information that can make the addict hold up his head and realize just what his condition is, it will serve to reinstate some of the unfortunates in the opinions of their families, while it is technical enough so that the physician may learn the truth.

As to the needs of the hour, they are education. No important courses in medical schools have been devoted to this disease, and laboratory work is almost negligible. "Education and training are the best hopes we have as a foundation for the alleviation of present conditions and the prevention of their further spread." "A campaign of medical and lay investigation and education will require a much shorter time than a continuous trying out of various panaceas, medical, legislative and administrative." The narcotic wards of our great hospitals should afford means of real study and the addict, himself, should be given much more extended hearing.

It is a missionary book, written by a skilled diagnostician, who in his study of the patients in public institutions has become impressed with the erroneous attitude of the world. The volume is intended to prove the entering wedge towards better conceptions, real appreciation and proper treatment of the innocent men and women afflicted with narcotic addiction disease.

✚

The Feeding of Nations. *E. H. Starling, London: Longmans, Green & Co., 1919. Pp. 146. Price $1.90.*

This little volume contains two lectures—the Oliver Sharpey foundation—by one of the most distinguished of English physiologists. The writer was an influential member of the Inter-allied Scientific Food Commission. No one is better qualified to review the great problems of food supply in war-time or to point out the principles to be applied in any future emergency. Here we have outlined the unsuccessful attempt of the Central Powers to maintain health and morale upon a diminished ration and the better control of a critical situation by the Allied Governments.

The following salient observations may be noted. Carbohydrates cannot be substituted for fats to an indefinite extent. A nation facing food shortage should pursue a middle course with regard to its live-stock, neither slaughtering in haste nor seeking to maintain the maximum number of animals. The nutritive requirements of children must be estimated very liberally. At a time when most foods are rationed there should be at least one type which can be had in unrestricted amount. This "elastic reserve," utilized to bring various diets up to the necessary energy value, is best represented by bread. The book is concise, clear, and informing. It is most interesting to read that despite high prices the present wage scales have greatly reduced the number of underfed families in the United Kingdom.

PERCY G. STILES, PH. D.

✚

Organization of Public Health Nursing. *Annie M. Brainard, New York: The Macmillan Co. 1919. Pp. 144. Price, $1.35.*

"Organization" is the hope of the present. No natural or local result along any line can be hoped for without the right kind of organization. It is therefore an encouraging sign of the times that so vital a problem as public health nursing is being organized for greater

efficiency. A book which deals with this organization problem in a helpful, practical way is the recently published volume, "Organization of Public Health Nursing," by Annie M. Brainard.

The public health nurse is not an innovation. We have had her with us for many years, in one of several capacities—as a district nurse, school nurse, tuberculosis nurse, factory nurse, visiting nurse, baby welfare nurse, etc.—and the field is constantly enlarging. But now a greater effort is being made to utilize this public health nurse and secure the greatest good to the whole community. This means organization. There are, of course, many snags in the way of developing public health nursing into a strong, efficient civic agency. The author points out these snags, especially emphasizing the necessity of keeping out of politics and of avoiding sectarian issues.

In addition to discussing the various types of organization, the author does not shirk the difficult task of showing what part the individual nurse may and should play in organizing the work in her own community. All too often the nurse, like the teacher, feels that the enthusiastic performance of her routine duties is the only service which should be expected of her. In fact she usually feels unqualified to undertake anything so ambitious as organization. But, as the author points out, the nurse can and should show her initiative and executive ability in helping put public health nursing upon a substantial basis.

Chapter V.—The Nurse's Part in Organizing—is an especially valuable discussion as is the following chapter on organizing public health nursing in a new community. From the first page to the last the book is practical, suggestive, and stimulating. It should find a large field waiting for it.

MAY BLISS DICKINSON, R. N.

✚

Courage. *Jeannette Marks, New York: The Womans Press. Pp. 140. Price $1.25 net.*

An inspiring and helpful little book for those who need to be reminded that mental courage and a healthful attitude of mind, together with the spirit to "carry on" are essential to the living of a successful life. Its message implies that every victory of will, however small or partial, helps in the training of complete self control, to be strong in one's self. To be unafraid, to have a will power obedient and sensitive, is to have achieved the greatest of victories.

The writer emphasizes the value of sleep as a means of bringing calmness and of reinforcing the courage needed to meet life fearlessly and bravely.

The importance of enthusiasm in work to be done, and the application of ourselves to the task at hand; as well as an open-minded and open-hearted attitude toward our fellowmen, is the message that this little book brings. With its appropriately selected poems, and its blue and gold cover, the author has not only presented a helpful little volume, but also an attractive one.

✚

Standard Methods of Bacteriological Water Analysis. *Boston: American Public Health Association. Fourth Edition. Waterproof cloth. Price $1.25.*

The revised edition of Standard Methods of Bacteriological Water Analysis which will come from the printer about March first, contains but few changes from the methods in the 1917 edition. Among the most important additions is the adoption of a method of adjusting culture media to a definite hydrogen-ion concentration instead of the old method of titration with phenolphthalein, although the latter method is still retained for the convenience of those who are not yet ready to adopt the newer and more accurate method. All recent work in bacteriology points to the fact that it is real acidity rather than titratable acidity that determines the conditions for bacterial growth. It is logical, therefore, to adopt a method which determines this real acidity as measured by the hydrogen-ion concentration. In the sugar fermentation reactions the amount of sugar used is reduced from one per cent. to one-half of one per cent. which is in line with recent practice. A restatement of the method of making Endo plates, and of carrying out the indol and methyl red tests is made, which it is hoped will lead to better and more accurate results. An optional method of sterilizing sugar media is added for the benefit of those whose autoclaves require a longer exposure to heat than one-half hour to reach the required time and pressure. Most of the other changes are of minor importance.

Health Almanac for 1920, Bulletin No. 98, U. S. P. H. Service.

Miners' Safety and Health Almanac for 1920. Miners' Circular No. 26, Bureau of Mines.

Almanac 1920, Louisiana State Board of Health.

If the wording of the Old Farmer's Almanac type of publication were followed, one would see recorded in health announcements at this season of the year, "About this time look for health almanacs." This group of three represents three different types of the little volumes that have become more or less familiar in these later years. In size and general appearance they are similar to the almanacs from the country drug store, which were kept handy by the kitchen fireplace. Like these there appears on each right hand page a calendar for the month, surmounted by a little sketch or legend or slogan appropriate to the season. Notable events, interspersed health maxims are mentioned beside the proper dates, and instead of the advertisements of "Dr. Dopem's Tonic," one will find the modern doctrines of prevention set forth.

The U. S. P. H. Service almanac presents on its front cover a picture of Uncle Sam, M. D., in colors. It is plentifully supplied with short, pithy articles on public health, there are illustrative sketches of that problem of exceeding importance, the privy, and the accompanying text is helpful in its nature. The almanac takes occasion to set forth an outline of the work of the service, the names and addresses of its district supervisors, and a list of helpful publications is appended. Instead of the stereotyped instructions "Begin sowing buckwheat," "Start spring plowing," or "Overhaul the tractor," this almanac suggests the value of fresh air, the need of avoiding overeating, the necessity for keeping stables clean, with slogans on fighting venereal disease.

The Miners' Almanac is special in that it points directly at means of preventing accident as well as conserving health. It follows more closely the stereotyped Government form of publication and is not so attention-compelling as the almanac of the State of Louisiana, for example. Miners' diseases are discussed, the value of the wet drill as preventing dust is set forth, there is a story about children's diseases, and flies, drinking water, physical examination of the family, typhoid, school inspection, venereal disease, sanitary housing and scores of other health topics are discussed. The privy here is of enormous consequence, so that an illustrated article on the proper construction of this essential finds place in the pamphlet. There is also a sketch of the work in mine rescue, and lists of helpful health publications, those of the Bureau of Mines and of the U. S. P. H. Service, the latter of which has aided in the preparation of the almanac. The compiler is R. C. Williams, Assistant Surgeon in the U. S. P. H. Service.

Suited to the eye and the circumstances of citizens in general is the Louisiana State Health Almanac. Its cover bears the old farmer but he is sowing the seeds of health. There are astronomical data sufficient for ordinary family use, together with a statement of the holidays. Each page of the calendar devotes itself to some general subject, avoiding accident, remedies, antidotes both for poisons and for bites and stings, first aid suggestions and the like, plentifully interspersed with health maxims. There are plenty of attractive little pictures modern in fashion, emphasizing the short lessons and stories that are given. An occasional poem and once in a while an item that is humorous, serve to lighten the tone of the little book. It will be kept throughout the year in many a household with a constant appreciation of the lessons that it is so quietly giving.

Coming Soon

The Membership Campaign for 7,500

You Will Be Able to Help

ASSOCIATION NEWS

HEALTH EMPLOYMENT BUREAU

Help-wanted announcements will be carried free in this column until further notice. Copy goes to the printer on the fifteenth of each month. In answering keyed advertisements, please mail replies separately.

The Health Employment Bureau also sends lists of applicants to prospective employers without charge.

Technician for laboratory work in bacteriological research under direction of commercial producer. Some knowledge of chemistry useful. Ability to carry on independent work will be recognized. Address B. W. J., 331, care of this JOURNAL.

Full time Health Officer. Must be M. D., energetic, experienced in sanitation and communicable disease control; school experience desirable. Salary $3,000 per year, with transportation while on duty in the County. Population of County about 60,000. Good roads. Address Norfolk County Health Department, 318 New Kirn Bldg., Portsmouth, Va.

Man for position of full-time Health Officer in well established Health Department. Must be capable and energetic. Meat and milk inspection work; fully equipped laboratory with full-time bacteriologist, public health nurses, and sanitation all under his jurisdiction. Must be available on or before April 1st, 1920. $3,000 to efficient man. References required. For details apply to T. C. Hudson, Chairman, Board of Health Control, Columbus, Ga.

Laboratory assistant or bacteriologist for routine work in private commercial laboratory. Man 18-25 years. Previous experience unnecessary. State education and name salary desired. Address H. A. Felder, South Bend Medical Laboratory, South Bend, Ind.

□

PROPOSED FOR ELECTION TO THE

A. P. H. A.

FROM JANUARY 13, 1920 TO FEBRUARY 10, 1920

SPONSORS* and NEW MEMBERS

MISS IDA MAY STEVENS, Berkeley, Cal.
Miss Margaret Beattie, Instructor in Public Health, Berkeley, Cal.

MILBANK JOHNSON, M. D., Los Angeles, Cal.
Donald J. Frick, M. D., Los Angeles, Cal.

HORATIO N. PARKER, Jacksonville, Fla.
Frank C. Gephart, Ph. D., Chemist, New York City.

GRACE WHITFORD, M. D., Ozona, Fla.
M. Josie Rogers, M. D., State Chairman Dept. of Public Health, Daytona, Fla.

H. O. JONES, M. D., Chicago, Ill.
Mrs. Emma E. Koch, R. N., Chicago, Ill.

HARRY L. O'CONNOR, M. D., Chicago, Ill.
Florentino N. Gonzales, Bacteriologist, Akron, Ohio

E. A. CRULL, M. D., Fort Wayne, Ind.
Gertrude Barber, R. N., Exec. Sec. Anti-Tuberculosis League, Fort Wayne, Ind.

M. V. ZEIGLER, Asst. Surgeon, U. S. P. H. Service, Indianapolis, Ind.
J. M. Bulla, M. D., Richmond, Ind.

L. D. BRISTOL, M. D., Augusta, Me.
Olin Sewall Pettingill, M. D., Health Officer, Greenwood Mountain, Me.

A. W. HEDRICH, Boston, Mass.
W. C. Bailey, M. D., Health Officer, San Jose, Cal.

F. J. Camboss, M. D., New Orleans, La.

Henry S. Capps, M. D., Health Officer, Beaumont, Texas.

Ettore Ciampolini, M. D., Cambridge, Mass.

A. S. Daggette, M. D., Pittsburgh, Pa.

Cyril Dickinson, Bacteriologist, Raynes Park, London, S. W. 19, England.

Chas. F. Freiburger, Sec. Detroit Dept. of Health, Detroit, Mich.

Alice G. Masaryk, M. D., President of the Czecho-Slovak Red Cross, Prague, Czecho-Slovak Republic.

Elizabeth Morford, B. A., Bacteriologist, Houston, Texas.

Rowlett Paine, Mayor, Memphis, Tenn.

B. C. Roloff, Exec. Sec. Ill. Social Hygiene League, Chicago, Ill.

MISS FRANCES D. PARTRIDGE, Port Huron, Mich.
Ella J. Fifield, M. D., Medical Examiner, Port Huron, Mich.

C. W. F. HOLBROOK, M. D., Newark, N. J.
Louis H. Osborn, Bacteriologist, Newark, N. J.

JOHN TOMBS, Regional Secretary, Nat. Tub. Association, Albuquerque, N. M.
New Mexico Public Health Assn., Atten. of Clinton P. Anderson, Albuquerque, N. M.

C. E. WALLER, M. D., N. M.
M. D. Taylor, M. D., Health Officer, Aztec, N.M.

F. L. RECTOR, M. D., New York City
Eloise Meek, M. D., New York City.

M. EDGAR ROSE, M. D., New York City
Mathilde S. Kuhlman, R. N., Supervising Nurse, New York City.

*States arranged in alphabetical order.

F. W. SEARS, M. D., Syracuse, N. Y.
Nehemiah B. Ford, M. D., Health Officer, Owasco, N. Y.

GEORGE B. ZIMMELE, Yonkers, N. Y.
Perry Thompson, Sanitary Engineer, Yonkers, N. Y.

W. S. RANKIN, M. D., Raleigh, N. C.
Wm. M. Jones, M. D., Greensboro, N. C.
W. C. Verdery, M. D., Health Officer, Fayetteville, N. C.

A. J. WARREN, M. D., Raleigh, N. C.
R. B. Wilson, Director, Public Health Education, State Board of Health, Raleigh, N. C.

HAROLD C. KNOPF, A. B., Cleveland, Ohio
Harry C. Mabley, M. D., Cleveland, Ohio

H. H. MERCUR, M. D., Pittsburgh, Pa.
J. L. Seibert, M. D., Bellefonte, Pa.

PROF. J. E. RUSH, Pittsburgh, Pa.
Mr. Roy Welter, Carnegie Inst. Technology, Pittsburgh, Pa.

LUTHER A. RISER, M. D., Columbia, S. C.
Edith E. Stroup, R. N., Public Health Nurse, Sumter, S. C.

MARY HARLEY, M. D., Sweet Briar, Va.
Harriet E. Chalmers, M. D., Eastern Penn. State Institution, Pennhurst, Pa.

MR. JAMES A. TOBEY, Washington, D. C.
Paul B. Johnson, M. D., Dept. of Health, Amer. Red Cross, Washington, D. C.

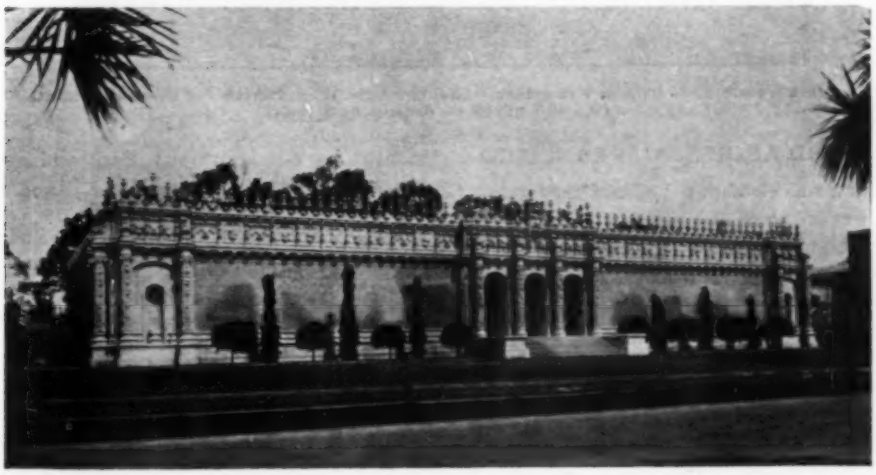
V. de Jesus, M. D., Philippine Islands
Constantino Limjoco, L. M., District Health Officer, Surigao, P. I.
Mr. Antonio V. Rubin, District Health Officer, Malaybalay, P. I.

MAJOR, EDW. STUART, Paris, France
Walter C. Klotz, M. D., Dir, Tub. San., Charlottesville, Va.

WHY NOT 7,500 A. P. H. A. MEMBERS?

When Dr. Frankel became President of the American Public Health Association he initiated the "Member per Member" campaign, which was so successful that it had the effect of doubling the existing membership. This numerical increase enlarged the scope of the Association, giving it the advantage of added members and consequent prestige, experience, ability and bettered financial condition. This excellent work President Rankin finds to be only the portal to increasing strength and he proposes to carry further the splendid work begun by his predecessor. The Association has now 4,500 members and subscribers, and Dr. Rankin has set the goal for this campaign at 7,500 members and subscribers, which he believes the Association can attain the present year. Accordingly he is taking the preliminary steps to this end. The intensive part of the campaign will come during the month of April.

The new "drive" will not for a moment lose sight of the great value of the efforts of the interested member, but proposes to conduct the campaign with each state as a campaign unit. Dr. Rankin, being himself a state health officer, realizes the advantage of enlisting other state health officers as campaign managers. The details of the movement will be set forth later. It is the hope to secure the help of every state health commissioner in the country. To each state



Golden Gate Park Memorial Museum, San Francisco, Cal., an architectural gem

will be assigned a quota of new members to be secured, proportionate to the possibilities of the state, and under the supervision of the State Campaign Manager committees will work in the pledging of members in their districts. In this way, and in skillful hands, the 1920 campaign for new members will be undertaken, and it will have no such word as "fail" in its vocabulary.

It will be incumbent on members to help by joining heartily in the work and reporting to their state health officers at the earliest moment. To every member there will be furnished presently the name of the campaign manager for his district, and instant activity is urged the moment the "drive" is on.

A picturesque spot in San Francisco. Fisherman's Wharf with its scores of boats and acres of drying nets

A WORD ABOUT SAN FRANCISCO

Whatever else may be said in favor of San Francisco as the meeting place for the Forty-eighth Annual Convention of the American Public Health Association, it has in its situation, its development and the spirit of its institutions the real environment for health administration of the most effective character. The situation of the State on the shore of the great Pacific Ocean bespeaks for its whole coast line a climate almost ideal for health. San Francisco, itself, on its narrow foothold between the open sea and the vast expanse of the bay, must feel the tempering influences of the partly enclosed basin. Its latitude, between 37 degrees and 38 degrees N., about the same as that of Richmond, Va., is a further natural factor to an equable climate, while the presence of the mighty mountain ranges no great distance to the east, which act as condensers of the cloud-borne moisture, assure healthful humidity, fertility and a sound economic basis to the country.

Greater San Francisco has added to its natural advantages the conserving ones of the preservation of breathing spaces for its people, and the Golden Gate Park and the Twin Peaks drive are evidences in the city of the public spirit of its people, supplemented by the University Park and green hills of Berkeley and Oakland's "Heights," its beautiful Lake Merrit and its easily accessible Piedmont. There are to be added to these the facilities of three great universities and the existence in the city itself of no less than 17 hospitals, most of them dating since the fire, and utilizing the most modern fireproof construction and up-to-date equipment. Such factors as these cannot fail to constitute an attraction to the health officer, who is already well informed as to the specialty of health administration in the city and the state.

Golden Gate Park, whose Memorial Museum stands an architectural gem in a setting of greenery, is one of the most remarkable examples in the world of the results of a determination of the people to preserve for themselves a playground. Here the desert has been made literally to blossom, for upon absolutely barren sand dunes has been superposed every ounce of the soil from which now spring groves and undergrowth, with bowling greens and grassy meadows, the resort of tens of thousands of the citizens. An uneven district, its tree-embowered lake standing at a height of nearly 300 feet above sea level, Nature has been coaxed to make here her haunts, the reversal of the customary procedure whereby the municipality takes to itself an established beauty spot of wooded hill and dale.

San Francisco's civic pride has already been evidenced in the JOURNAL in the splendid City Hall, which is the pivot of its civic center. Here in the heart of the city have been assembled a group of municipal structures that no other city of the country can match. City Hall, Municipal Auditorium, Opera House and Public Library, in harmonious beauty, here enclose a park with splashing fountains, decorative shrubbery and delightful setting. The dignified building dedicated to the education of the people through their reading, the San Francisco Public Library, finds itself in good company.

At the Civic Center the San Francisco Public Library finds itself in good company

One other matter of greatest health interest to be touched upon briefly is that of food supply. Ocean, bay, river and farming lands are at hand to contribute. Of the quality and freshness of its fish supply the JOURNAL can present a bit of pictorial evidence, Fisherman's Wharf, with its scores of smacks and acres of nets spread out to dry. These little boats are in the service constantly and every day glide to their grounds to tap the inexhaustible finny wealth of the Pacific. And as for San Francisco's markets, they need but be seen to be appreciated.

LITTLE ROUND-UP OF TUBERCULOSIS ITEMS

Traveling Clinic of the Washington (State) Tuberculosis Association. — Although the traveling tuberculosis clinic, moving about over a state or a district with the freedom that the motor truck affords is not, strictly speaking, a novelty, it still seems worth the while to note the development of such a movement in the far Northwest as this has been accomplished in the state of Washington under the care and management of the Washington Tuberculosis Association of Seattle. The focusing of fresh minds on a problem, especially under conditions that are not common, has in it at times facts of value even for those who have begun and carried forward similar enterprises. This report has been prepared for the JOURNAL by Mrs. Bethesda Beals Buchanan, Executive Secretary of the Washington Association.

Washington, of all states in the Union, might be conceded by anyone even slightly familiar with its topography and history, to offer the greatest scope for the work of a traveling tuberculosis clinic, at the same time presenting the greatest number of difficulties to overcome.

From the brilliant, sub-tropical weather of the eastern and southeastern part of the state, and the Columbia River Valley, where hot winds blow across thousands of acres of volcanic ash soil rapidly being put under cultivation; across the almost impassable barrier of the Cascade range running across

the state from north to south, to the Puget Sound district, where 3,000 square miles of salt water lie within the borders of the state, where rains, fogs, many immense glacial rivers, primeval forests, tide lands, and hundreds of islands make up the country, there are a thousand variations of temperature and climatic conditions.

To the physician, there is presented in this state innumerable types of environments, in each of which are found groups of people subject to what might almost be termed endemic conditions—as for instance the high percentage of goitre-afflicted natives of the northwestern part of the state; or the rapid growth and inadequate housing and sanitary states of many lumber and mill camps, fruit growing areas and fishing villages.

Aside from geographical variations, there is the insistent problem of assimilation of the steady stream of new peoples pouring in from all quarters of the globe; the influence of the Oriental commerce and population, against a background of pioneer stock which has, for the most part, forgotten the hardships of early days, and which resents any new fad or cult out from the east. These influences, now faced by the second generation of hardy Americans who are today building the substantial towns and cities, and who are to the fore in educational and cultural movements, together with the thousands of returned Alaskans now resident here, may furnish some idea of the task which confronted the Washington Tuberculosis Association when it determined to send a traveling clinic over the state, a task to which its 21 affiliated leagues gave signal assistance.

The outfit which was to travel as many miles as possible in a given length of time was most carefully planned and reduced to the simplest needs, not only for its clinical work, but for purposes of hard and rough traveling. A Ford truck of the one-ton capacity was purchased and equipped, bearing on its canvas cover the double-barred red cross, and the words, "Traveling Clinic and Exhibit of the Washington Tuberculosis Association." A lighting system with engine was carried for a while, but was later detached, since no town was visited which did not have an electric lighting system, owing to the abundance of hydro-electric power in the state. The moving picture and stereopticon show was condensed into traveling cases, the doctor's "office" was packed in a cracker box and bed rolls, blankets and a cot provided for emergencies. An educational exhibit was furnished, consisting of 180 National Child Welfare League pictures and collapsible racks for hanging, together with literature, records, maps, charts, etc.

The publicity was of an elementary sort, what might be termed as the advance agent type. Window cards, hard bills and descriptive folders supplemented by newspaper articles, talks before committees, commercial clubs, with superintendents of schools, the mayor, the health officer or leading physician of the town, and to groups of women interested in educational

Arrival at the Commercial Club was not unnoted by the people of Mount Vernon

matters. The professional side of the matter was by no means neglected.

Where anti-tuberculosis leagues existed, its offices assumed charge of all arrangements, and saw the clinic through its one-day visit. Where there was no league, the names of people who had assisted in seal sales, and done war work were furnished, and Miss Harding usually asked that a representative group be called together, who were then formed into a committee on arrangements.

In the schedule of work was first the determination of those places in which such a clinic was most needed, and next the finding of a place suitable for it and the accompanying exhibitions. The program was roughly divided into four parts, the clinic, the exhibit, the infant welfare demonstration, and the evening meeting. The at-

tendance was remarkable. Children who came to see the pictures went home to get their brothers and sisters. Whole school classes were sent by their teachers. Women who came to the infant welfare meetings stayed to ask questions. The evening lectures were well attended and by a very general company from young couples to returned soldiers and old people. Everywhere the clinic found itself welcome, in the larger places the chambers of commerce were especially helpful, while in smaller places oftentimes some business enterprise, a mining or a lumber company, furnished the hall and did whatever was possible towards being helpful.

The personnel of the party accompanying the exhibit included Dr. Raymond J. Cary, Miss Edith E. Farrar, R. N., and Miss Hilba J. Solibakke, who were aided by the officers of the Association. The larger one of the illustrations shows the exhibit as set up in the hall of the Commercial Club, Mount Vernon, with Miss Solibakke speaking, while the smaller one gives evidence of the interest that its arrival excited before the door of the club house. Miss Farrar is in the doorway, with Dr. Cary close at hand. The ladies with Miss Solibakke at the curb are Miss Payne and Miss Byrnes of the local force.

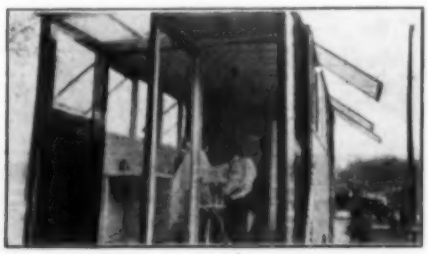
The statistics compiled by Dr. Cary testify to the seriousness of the work. Sputum tests were made at the laboratory of the state board of health, and every effort made to check the diagnosis in order that the work might stand the most crucial test. No X-Ray work was attempted, but in each case where indicated the patient was advised as to what was best to be done in his case. Out of 39 counties in the state, 24 were visited, so that a territory was invaded as large as Ohio and Indiana, the exact population of the towns visited being 322,858. 580 examinations were made, classed as "Under 15," "15 to 20," "20 to 30," "30 to 40," and "Over 40." It was found that of the 230 men and 350 women examined, 410 came to the clinic by reason of publicity; 110 referred by nurses, and 60 by local physicians. The result shows 356 non-positive cases, 78 positives, 88 arrested, 47 suspects, 37 of the total showing a positive family history.

EXHIBIT SET UP IN THE COMMERCIAL CLUB AT MOUNT VERNON, WASH.

The educational statistics show there were given 63 Tuberculosis lectures, attended by 6,659 people; 58 infant welfare lectures, attended by 1,746; 15 child hygiene lectures, attended by 1,774; 6 miscellaneous lectures (oral hygiene and others), attended by 352; that the moving pictures were shown 49 times with an attendance of 6,493; and that the number of people attending exhibits and demonstrations was 10,051.

✣

Chicago Ambulatory Motor T B Clinic.—Some of the details of the Ambulatory Motor Clinic of the Chicago Tuberculosis Institute have already been presented in the JOURNAL (Nov., 1919, page 892). The opportunity is now afforded to give a view of the interior of the "main room" of the motor truck. This has the usual dispensary equipment in steel furniture enamelled in



white; the various items being clamped to the floor. There is a wash stand with running water, a table for the doctor's use, and a desk for the nurse's records. A chair for the patient and lockers furnish the seats, the lockers being used for storage of the outfit. The back of the auto has two doors, which give free passage, and they open upon a tail-board piazza from which steps descend to the ground. The front is partitioned off from the main room by curtains and can be used for dressing room, while the seat of the chauffeur can be converted into a bed. Ventilation is secured by means of hinged sashes at the tops of the sides.

✣

Connecticut Tuberculosis Commission.—The system established in the state of Connecticut for fighting tuberculosis has the reputation of being one of the most effective in the country, and has certain points of advantage over those which consist of volunteer organization and association. At its head is a State Tuberculosis Commission, organized a decade ago, which acts in coöperation with all state, municipal and community health units. The following facts with reference to the work of this Commission have been kindly furnished to the JOURNAL by Hubert M. Sedgwick, Field Secretary of the Commission.

The Commission, long firmly committed to the policy of preventing, as well as curing tuberculosis, is energetically developing a plan for discovery of early cases, their prompt treatment, and the examination of suspected and contact cases.

With an estimated number of 15,000 cases in the State, only about 700 are housed for special treatment in the six sanatoria for lung tuberculosis at Hartford, Meriden, Norwich, Snelton, Wallingford and Wildwood, respectively, and 60 in the new bone tuberculosis sanatorium which has just been opened at East Lyme.

With only one out of 20 of the tuberculous patients in the state receiving sanatorium treatment, the problem of handling the remaining cases calls for an educational and preventive program that is extremely efficient and energetic.

Beginning with prudent and progressive sanatorium administration, the Commission has expanded its activity along several interesting and important lines. It has installed bacteriological research in every state sanatorium and conducted experiments, particularly in heliotherapy, and varying power and appearance of the causative agent of the disease.

It has loaned its staff of tuberculosis experts in the several sanatoria for holding clinics and giving lectures in the congested cities, the factory centers, and to medical societies and health organizations. It has assisted in the formation of tuberculosis units throughout the state. By itself and through its local agents it raised a Christmas Seal fund of $75,000 for preventive and educational work in Connecticut during 1920.

The clinics held by its sanatoria superintendents and their assistants have included:

1. The largest cities of the state.
2. Factories in which progressive Connecticut manufacturers have established

dispensaries, in connection with factory nursing.

3. Temporary clinics in the larger towns of the state.

This extension of the preventive program is responsible for the discovery of hundreds of early cases, and the work is regarded as one of the most valuable contributions ever made to Connecticut anti-tuberculosis warfare.

In this connection, an educational program has been undertaken which comprises placing effective anti-tuberculosis literature in the large factories of the state, especially those which maintain nurses.

A group of 55 local units or agents of the State Commission has been organized to coöperate with it in carrying out its community plans. These include tuberculosis societies, visiting nurse associations, Red Cross local chapters, and miscellaneous health organizations, such as mothers' clubs, sunshine societies, D. A. R. chapters, and other similar societies which represent the health work of the locality. Into their local programs has been breathed the spirit of active, progressive prosecution of the State Commission plans for searching for the early cases and for the protection of the contacts.

A new sanatorium, "The Seaside," for the treatment of tuberculosis of the bones, has been established at East Lyme, a shore village on Long Island Sound not far from New London. A former hotel has been purchased by the state, remodeled and equipped and has a capacity of 58 patients.

✣

Prevent the Migration of Tuberculates Without Funds.—In an effort to save to many unfortunate persons each year the discomfort and hardship which must accompany their migration to another state, the Denver Anti-Tuberculosis Society plainly sets forth the conditions in the state of Colorado as a warning. The same general condition is true of other places which have for one reason or another chosen to advertise the health-giving qualities of their several climates.

It is estimated that several hundred tuberculous persons without funds come to Denver every year. Practically all of them come because they have the mistaken idea that climate will cure tuberculosis.

They arrive, almost penniless, without having made any inquiries, or any provisions for their needs. Since Colorado has no state, and Denver no municipal tuberculosis sanatorium (merely a ward at the County Hospital for thirty-five very sick tuberculous residents), the care of such indigent persons is limited to a few free private sanatoria, which are continuously so overtaxed that admittance is a long and difficult matter. These sanatoria comprise: the two Jewish, which accept only a small number of Gentiles; a tent colony of men with a capacity for seventy "down-and-outers"; and a small home for a dozen destitute tuberculous women.

These tuberculous poor who migrate to Denver, finding no place where they can be cared for, look for light work in order to maintain themselves and often their dependent families; but the demand for such work is far in excess of the supply. Driven to any work they can get, with neither friends nor care, anxious, homesick, hopeless, they rapidly grow worse, and usually soon die. They die for lack of proper rest, food, fresh air, and medical attention, those essentials of treatment, which many of them could have had at home—or here with sufficient funds for two years' care. Without these essentials climate is of no avail. If it were, Denver would welcome these tragic health-seekers instead of urging them, for their own best chances, to stay at home.

Denver also urges that the states throughout the country plan definite programs to retain their indigent tuberculous, giving them effective treatment in state sanatoria or in their own homes.

✣

The Weaker Sex

The weaker sex
Is that portion
Of the human race
Who goes downtown
In zero weather
In a half-masted lace waist
And pumps
To buy a muffler
And woolen socks
For her husband
So he can go to work.

PUBLIC HEALTH NOTES

Primary Causes and Hygienic Treatment of Constipation.—Constipation is very prevalent and is frequently the cause of malaise and general ill health. In a constipated individual, the waste products of the body have not been properly eliminated. This leads often to autointoxication with the poisonous materials resulting from the decomposition of the excreta in the body. The causes of constipation are carelessness, ignorance and laziness combined. Every individual should make an effort to eliminate, immediately after rising in the morning. Constipation is preventable, and can be prevented by forming the habit of daily elimination, by drinking plenty of water, and by including sufficient roughage in the diet. Children should be taught the importance of having regular and daily eliminations. Cathartics will not cure constipation, but are more likely to aggravate the condition. They should, therefore, not be employed. A plain water enema is the least harmful of anything, and should be employed where bowel movements are not regular.—Dwight H. Murray, M. D.—*N. Y. Med. Jour.*, Nov. 8, 1919. (*M. P. H.*)

✝

Treatment and Disposal of Sewage.—Attention is called to an article in *Public Health Reports* for January 16, 1920, which describes briefly and satisfactorily the methods, processes and structures used in the treatment and disposal of sewage in the United States. At the end of the discussion of each method, an excellent and up to date bibliography is given. The article discusses the following methods of sewage treatment: dilution, grit chambers, screening, plain sedimentation, chemical precipitation, septic tanks, Travis tanks, Imhoff tanks, sludge disposal by dumping at sea by air drying in open beds, and by pressing, contact filters, trickling filters, intermittent sand filters, disinfection, broad irrigation, activated sludge, Miles' acid process and the electrolytic process.—(*M. P. H.*)

✝

Venereal Disease Clinics in Massachusetts.—On February 1, 1918, Massachusetts required that all cases of venereal disease be reported. From February 1, 1918, to August 1, 1919, 19,218 cases of venereal disease were reported, of which 13,444 were cases of gonorrhea, and 5,774 were cases of syphilis. These cases were reported by only one-quarter of the physicians in the state, so that it is believed there are many more cases of venereal disease which have not yet been reported. In order to treat venereal diseases, 16 state approved clinics have been established in various parts of the state. The purpose of these clinics is to furnish special treatment for patients suffering from venereal disease, to provide consultation service for physicians who wish assistance, to distribute arsphenamine free to physicians who know how to administer the drug, and providing no charge is made for its use. The question of need for arsphenamine is determined as far as possible by confirmatory Wassermann tests. An attempt is also made to follow up cases of venereal disease, and to keep track of each case until it is terminated.—*Boston Med. and Surg. Jour.*, Jan. 1, 1920. (*M. P. H.*)

✝

Meningococcus Carriers.—According to the authors the sites of carrying in the chronic meningococcus carrier are Luschka's tonsil, the fossa of Rosenmüller, the retronasopharyngeal wall, and the faucial tonsils. The anterior and upper parts of the nose and the nasal sinuses are not, as a rule, infected. The presence of lymphoid hypertrophy and nasal obstruction, although it may favor the production of a "chronic carrier," is not necessarily the cause. Meningococcus carriers are divided into two groups: (1) Acute or temporary carriers, those carrying under eight weeks; (2) chronic carriers, those carrying over eight weeks. Acute or temporary carriers remain infectious on an average for 24 days; the maximum discharge rate occurs during the third week. Chronic carriers remain infectious on an average for 5½ months. Eighty per cent of carriers are acute or temporary, 20 per cent chronic. Treatment of the carrier appears to prolong the carrying period. The meningococcus remains in the "carrying site" until ousted by some other bacterium. The best method of freeing a meningococcus carrier from infection is Nature, open air and exercise.—D. Embleton, W. S. Bryant and G. H. Stevens. Lancet, Oct. 18, 1919, 679, Abstr. Jour. A. M. A., Nov. 22, 1919, 1642. (*D. G.*)

Comparison of Antigens in T. B. Fixation.—The serums of 97 clinically normal individuals, 37 questionably tuberculous, and 84 incipient, 75 moderately advanced and 31 far advanced cases of pulmonary tuberculosis, using for comparison the autolysate antigen of Corper, the methyl alcohol soluble antigen of Petroff and the Wilson bacillary antigen gave the following results:

The three antigens did not differ greatly in the percentage positive findings in known cases of pulmonary tuberculosis, Petroff's antigen giving 66 per cent, the autolysate antigen 63 per cent and Wilson's antigen 57 per cent, the last being the least efficient of the three.

The percentage of positive findings obtained in the various classes of cases by the three antigens were 11 per cent of clinically normal individuals, 58 per cent of questionably tuberculous, 56 per cent of incipient, 64 per cent (66 per cent sputum positive cases) of moderately advanced, and 71 per cent of far advanced cases. Moribund cases gave a lower percentage positive, 44 per cent, than any of the other definite cases of tuberculosis, corroborating the findings by previous reliable investigators.

A fairly high percentage of serological positive luetic serums, 50 to 60 per cent, gave cross fixation with the three tuberculosis antigens.—H. C. Young and J. P. Givler, Am. Rev. of Tub., Oct., 1919, 476 (*D. G.*)

✣

Condition of Patients 20 Years After Discharge from T. B. Sanatorium.—The table below indicates the condition of patients after their discharge from the Trudeau Sanatorium for a period of 20 years or more.

Summary of Traced Patients of 816 Dead

	Incipient		Moderately Advanced		Far Advanced	
	No.	Pct.	No.	Pct.	No.	Pct.
Active	15	71	251	95	154	98
Inactive ..	56	44	163	74	24	86

Died of Tuberculosis. Known Deaths, 174

	Incipient		Moderately Advanced		Far Advanced	
	No.	Pct.	No.	Pct.	No.	Pct.
Active	5	100	61	95	48	98
Inactive ..	4	67	35	81	1	100

Traced Patients, 814

Alive after twenty years....148 = 18.2 per cent
Dead .....666 = 81.8 per cent

(Includes non-tuberculosis and doubtful.) Six incipient active not discharged long enough.)—F. H. Heise, Am. Rev. of Tub., Oct., 1919, 497 (*D. G.*)

City Plan for Tuberculosis.—Dr. Craster, the Health Officer of Newark, N. J., has laid out a plan for tuberculosis control in a city, the outline of which is indicated below:

A. Control of Infection—
   - Reporting by physicians
   - Hospital and sanatoriums
   - Day camps and tents; field nurses
   - Laboratory; enforcement of anti-spitting laws; milk supervision.

B. Social Progress—
   - Publicity
   - Social insurance
   - Anti-tuberculosis societies program
   - Home visiting and relief

C. Economic Improvement—
   - Improved housing
   - Industrial hygiene
   - Open air school
   - Vocational training
   - Employment bureau

D. Associated Activities—
   - Control of epidemics (measles, whooping cough, etc.)
   - Convalescent homes
   - Child hygiene
   - Mental hygiene

—C. V. Craster, Jour. A. M. A., Jan. 31, 1920, 302 (*D. G.*)

✣

Untilled Fields of Public Health.—In an address before the Section on Physiology and Experimental Medicine, of the American Association for the Advancement of Science, Professor C.-E. A. Winslow, summarized the great accomplishments in public health, and the probable advance to be attempted in the future. Much has been accomplished through the sanitation of the environment. Typhoid fever has been greatly diminished. Cholera is almost non-existent in this country. Malaria, yellow fever, plague, typhus fever and smallpox can be adequately controlled through known methods. The discovery of many of the causative agents of disease, and the development of antitoxic sera and vaccines have materially aided in overcoming disease. Infant mortality has been greatly reduced. There remain alone, such causes of death as heart disease, tuberculosis, pneumonia, Bright's disease, cancer and other diseases which are dependent on the personal conduct of the individual life which have not yet been adequately controlled. The control of these diseases depends primarily on good personal hygiene. **Through the**

greater spread of school medical inspection, school nursing, medical inspection and aid in industry, and the elevation of the standards of living for thousands of families, much has already been done to combat disease. The organization for adequate public health protection has, however, not yet been realized. The time is coming when the protection of the public health will be as amply supported as public education, and when health centers will be as numerous and as adequately equipped and supported as school houses are in our communities today. In order to meet this growing demand for properly qualified health workers, all persons intending to pursue public health lines should be adequately trained. —*Science*, Jan. 9, 1920. (*M. P. H.*)

✚

What We Have Learned in Dietetics From the Army.—At the beginning of the recent war, General Gorgas organized a Division of Food and Nutrition, whose function it was, to make frequent inspections of food conditions in the camps and in the field, to improve the cooking and serving of the food, and to study constantly the suitability of the ration. As a result, the average requirement of food for the soldier in training is known for the first time. The following facts are also known; the amount of food the soldier eats outside of the mess; the average composition of the food eaten in the mess; the variation of food consumption in different seasons of the year; the variations in food consumption in different companies of the same regiment, owing to various psychological factors; and the average consumption by different classes of patients in the army hospitals. Through this thorough study it has been possible to work out an average ration. It was found, however, that where the soldier had a free choice of foods, he ate less meat, bread and potatoes than are prescribed in the ration, and more beans, fruit, milk, butter, coffee and sugar.—John R. Murlin, Ph.D., *Mod. Hospital*, Jan., 1920,*(M. P. H.)*

✚

Teaching Health in the Schools.—The period of childhood is undoubtedly the best period in life in which to teach the principles of healthy living. It is necessary, however, to arouse the interest of children in healthy living in order to enable them to form good habits relating to health. Since children like to wear badges and belong to clubs, it has been possible to arouse their interest in good health through the organization of health leagues, and the Modern Health Crusade movement. Group competition based upon weight and height, should be employed to stimulate interest. Health pictures and posters should be employed. Mothers should be kept regularly informed regarding the health progress of their children. The teaching of health should be a part of the regular cirriculum and should not be confused with physiology or physical training. Medical inspection and school nursing should be extensively introduced. The medical examination should be thorough and regular, and should determine the facts regarding the nutrition of the children, as well as the ordinary physical defects. The child should receive a thorough medical examination at least once a year.—L. Emmett Holt, M.D. *American City*, Dec., 1919. (*M. P. H.*)

✚

Chlorination of Water Supplies.—The sanitary engineers of this country are responsible for the introduction of chlorine disinfection of water supplies. The first experiments were conducted with calcium hypochlorite by George A. Johnson at the Union Stock Yards in Chicago. This was then followed by the treatment of the Jersey City water supply at Boonton, N. J. The use of calcium hypochlorite was so popular that in 1911, 500 plants were in operation in the United States. Owing to the difficulty of preparing uniform disinfecting solutions from the calcium hypochlorite, and because the chemical deteriorated on standing, liquid chlorine was introduced to replace it. The amount of chlorine added can be determined more accurately with liquid chlorine than with calcium hypochlorite. In 1918 approximately 2,500 water purification plants in the United States were using liquid chlorine. It is used very often as an adjunct to filtration, and is exceedingly valuable in cases of sudden infection. The cost of using liquid chlorine is about 40 cents per million gallons of water treated. For a municipality of 5,000, the cost of such treatment per year, including depreciation would be only $150. There is no doubt that chlorination of water supplies has reduced the typhoid fever death rate remarkably, and that if smaller communities adopted chlorination on a larger scale, the typhoid fever death rate would be diminished still further.—*Editorial, Journal A. M. A.*, Dec. 27, 1919. (*M. P. H.*)

New Regulations Regarding Quarantine Periods.—The New York City Health Department has altered some of its quarantine regulations to read as follows: The minimum period of quarantine for (a) diphtheria shall be 12 days from onset, during which time no cultures will be examined; after which, until two consecutive cultures, taken not less than 24 hours apart, and preferably from both nose and throat, fail to show the presence of diphtheria bacilli.

(b) For Scarlet Fever: 30 days after the onset of the first symptoms, provided discharges from nose and ears have ceased.

(c) For Cerebro-spinal meningitis: 14 days from the onset.

(d) For Acute Anterior Poliomyelitis: 3 weeks from the date of onset.

(e) For Typhoid Fever: Until 10 days after the patient's temperature reaches normal, and thereafter, until two specimens of feces, collected at least 24 hours apart, are found to be free from the presence of typhoid bacilli. —*Weekly Bulletin, N. Y. C. Dept., Health*, Jan. 24, 1920. (*M. P. H.*)

✣

Excellent Anti-Tuberculosis Work in Rensselaer County, N. Y.—The Rensselaer County Tuberculosis Association was organized in March, 1919, with Joseph Herzstein, of Troy, N. Y., as Executive Secretary. The first annual meeting of the Association was held January 28, 1920, at which time the work of the preceding ten months was reviewed. Besides effecting a reorganization, Mr. Herzstein has built up a technical staff consisting of a medical director and two public health nurses. A tuberculosis dispensary was established, at which clinics were held three times a week. Altogether 595 free medical examinations were given, and 95 persons were found to be tuberculous. Sanatorium treatment was procured for 68 cases. The nurses made over 2,200 visits to the homes of patients suffering from tuberculosis. The active tuberculosis campaign created such a good impression that a special appropriation was made in the 1920 budget for Troy, for the employment of a tuberculosis nurse among the personnel of the health department. An active health education compaign was conducted by the executive secretary in the school, the factories and through the public press. Besides distributing literature on health, 39 lectures were given, most of them illustrated with lantern slides. Motion pictures and exhibits were also employed.—*Troy Record*, Jan. 29, 1920. (*M. P. H.*)

✣

Scarlet Fever in Massachusetts.—Scarlet fever in Massachusetts is increasing daily, and likewise the deaths from scarlet fever are also increasing. There had been a continued decrease of the disease from 1915 to 1919. As a result, there are a large number of children in the state who have not had the disease, and who are not immune. It is, therefore, expected that the disease will be unusually prevalent this year.

The control of scarlet fever depends on the detection of all cases, especially the mild ones, during the acute stage of the disease. All cases should be quarantined for 28 days after the onset of the disease and until infective discharges from the nose and throat, ear and abscesses, have ceased. All contacts should be excluded from school for 8 days, unless they are immune, through having had the disease previously. The children in the school where a case of scarlet fever has occurred, should be examined by the school physician or the public health nurse. Children having sore throats, discharges from nose or ears, or suppurating glands or abscesses, should be excluded. The school nurse should follow up every case, every day, and should investigate all cases of absence, in order to detect all mild cases. No person who is ill with scarlet fever, or who has been exposed should be permitted to handle milk or other food supplies, until the maximum incubation period has elapsed or until release has been obtained from the board of health. It is interesting to note that milk is becoming an infrequent factor in spreading scarlet fever in Massachusetts. From 1909-1914, 845 cases of scarlet fever were traced to milk, while from 1915 to 1918, only 140 cases are known to have originated from infected milk. Besides conducting an epidemiological investigation of every case of scarlet fever that is reported, all persons who have been exposed, and whose daily work brings them into contact with children, should not return to work without permission from the local board of health.—Stanley H. Osborn, M.D., *Commonhealth*, September-October, 1919. (*M. P. H.*)

Hospital and Health Survey in Cleveland.—An extensive hospital and health survey is to be made by the city of Cleveland, Ohio, under the direction of Dr. Haven Emerson. Mr. Malcolm McBride is chairman of the committee in charge of the work, and Mr. Howell Wright is secretary. The survey is to consist of two parts. One will be a survey and study of the existing hospital and health facilities, both public and private, and the other will be a study of the community. The former will consider the following points:

1. Existing facilities for medical education.

2. A study of the present nursing educational system including the training schools and facilities for special education and training.

3. The relationship of the Department of Public Health to the hospitals, dispensaries, medical institutions, medical profession, and the care of cases of communicable disease.

4. A study of the existing hospital facilities in order to determine the number of pay or private room patients, part-pay and ward patients and free patients. An attempt will also be made to determine what the normal needs of the community should be for each of these groups of patients.

5. A study of the available facilities for the care of the following cases; contagious, including venereal, acute surgical, acute medical, chronic surgical and orthopœdic, chronic medical, convalescent, insane and mental diseases, aged and infirm, maternity babies and children, accident and emergency.

6. A study of dispensaries with special reference to their location, availability, the type of cases treated, and the facilities of each.

Under the section of the survey dealing with the community, there is to be a detailed study of the vital statistics, including morbidity, accident and mortality rates, race distribution, age distribution, occupations, and perhaps, also, a sickness survey. The care secured by the sick will also be studied. Under this head, such factors as financial status of the sick, home conditions, knowledge of existing relief and welfare agencies, will be considered. The capacity and facilities of existing agencies to give relief will also be studied. An attempt will be made to estimate the reduction in sickness that would occur, through the extension of preventive medicine and health insurance. Finally, the relationship of the medical and nurses' training schools to present and future hospitals, to dispensaries, to sickness prevention and to the health department will also be considered.—*Modern Hospital*, December, 1919. (*M. P. H.*)

✣

Supervision of the Pasteurized Milk Supply in New York State.—It is interesting to note that during the past year and a half, the supervision of pasteurizing plants has been under the direction of the Engineering Division of the New York State Health Department. Theodore Horton, the chief engineer, compares a pasteurizing plant to a water purification plant and brings out many similarities. There are about 600 milk pasteurizing plants in New York State, 350 of which operate almost exclusively for New York City, and the other 250 for the municipalities up-state. The latter plants have been inspected from 2 to 7 times during the past year and more. Conditions at these plants were found to be deplorable. On the average each plant was urged to make 15 to 18 improvements. By repeated inspections and cooperation on the part of the owner, about 40 per cent of the original recommendations have been carried out. Each plant is required to conform to certain rules and regulations. After each inspection, a report is left with the owner, the health officer and the sanitary supervisor. Pasteurization is accomplished by the holding method, and each plant is urged to install a self-recording time thermometer.—*New York State Health News*, November, 1919. (*M. P. H.*)

✣

Nursing Situation from the Public Health Point of View.—Recently a committee was appointed with Professor C.-E. A. Winslow, as chairman, to study the public health nursing situation in this country. At the present time there are 15 educational institutions which train students in the theory and practice of public health nursing. The demand for public health nurses has been so great that it has been impossible to meet it. What the investigation hopes to bring out in a clear and definite way, are the functions of the public health nurse, the existing facilities for training public health nurses, and the various fields which are open to public health nurses. According to Miss Anne H. Strong, the present training of most public health nurses is inadequate and inefficient. She also believes that bedside nursing should play an important part

in this training, and that each public health nurse should have adequate experience, not only in the usual medical, surgical, obstetrical and pediatric services, but also in eye, ear, nose and throat work, in mental and nervous diseases, and in communicable diseases, including tuberculosis, syphilis and gonorrhea. She should also be experienced in the outpatient department as well as the wards. It is also important that the requirements for admission to a school of public health nursing should be higher than they are now.—*Modern Hospital*, December, 1919. (*M. P. H.*)

✚

The Mohawk-Brighton Plan of Health Protection.—The reason why even well organized and efficient health departments do not succeed in materially diminishing the death rate and preventing disease is because our means of approaching and actually bringing to the people our knowledge about disease prevention and healthy living are seriously deficient and unsuccessful. It is because the general interest of the people in good health is not aroused except during periods of epidemics. If it were possible to stimulate the people sufficiently, so that they would be interested in good health and would demand adequate health protection, greater strides in disease prevention would be made. In the Mohawk-Brighton district of Cincinnati, 12,000 people were organized, and educated sufficiently so that they became thoroughly interested in initiating and controlling all activities aiming to better their personal and community health. Besides coping with the problems of fly and mosquito control, garbage collection, housing, sanitary food control in stores and restaurants, general nuisances, and other matters dealing with municipal sanitation, the following modern health systems were introduced:

1. Most of the expectant mothers were reached and given prenatal advice after the third month of pregnancy.

2. There was early and continuous supervision of all babies and adequate care of the mothers immediately after confinement.

3. Medical examination of children in the pre-school age was cared for and the correction of many physical defects.

4. The discovery and control of all active cases of pulmonary tuberculosis was begun.

5. Medical and nursing care of the sick was secured.

6. Unusual care was taken of cases during the influenza epidemic together with the general education of the community.

7. Correction of gross sanitary violations was undertaken, and improvement in the general cleanliness of premises.

8. The attention of parents has been called to the need and desirability of adequate health protection for their children.—Haven Emerson, M.D., *N. Y. Med. Jour.*, December 13, 1919. (*M. P. H.*)

✚

Prevention Versus Education.—In an advertising story H. W. Mowery in *Safeguarding Industry* brings up very vividly the difference between Mr. Dollar Foolish and Mr. Universal Safety, the former of whom has accidents in his plant that cost money, but he considers them covered by insurance. He is ignorant of the causes of accidents and thinks to stop them by posting bulletins instead of removing the causes. He hopes that people will remember only their safety and he permits hazards to remain instead of accepting the principle, that "conditions shall be such that people may pursue safely their normal activities without abnormal care." He talks in high sounding phrases, but neglects safe conditions.

On the other hand, Mr. Universal Safety knows what are the prolific causes of injury and he knows further, that merely educating foremen and workmen is not enough, if the causes remain. This story is woven skilfully about figures that show slipping to be one of the most important causes of accident in industrial establishments.

✚

Makes Swimming Safe.—The leading article in a *Red Cross Bulletin* is the first of three in a series telling of an effort that is to be made to prevent a portion at least of the enormous toll from drowning. There are about 8,000 deaths a year in the country from this cause and the A. R. C. avows its intention of taking the fear out of swimming and making the waters of our shores a safer playground for the young people. The work was taken up by the Red Cross in 1914 and the result has been an organization with life saving corps at different stations along the coast. There are three sections now in operation, for boys, women and for men, the latter of which has now 500,000 members. The slogan of the corps is: "Everybody a swimmer and every swimmer a life saver."

Fourteen Points About Cancer.—The American Society for the Control of Cancer sets forth the truth of the matter ingeniously in 14 points.

1. During the Great War the United States lost about 80,000 soldiers. During the same two years 180,000 people died of cancer in this country. Cancer is now killing *one out of every ten persons over forty years of age.*

2. Many of these deaths are preventable, since cancer is frequently curable, if recognized and properly treated in its early stages.

3. Cancer begins as a small local growth which can often be entirely removed by competent surgical treatment, or, in certain external forms, by using radium, X-ray or other methods.

4. Cancer is not a constitutional or "blood" disease; there should be no thought of disgrace or of "hereditary taint" about it.

5. *Cancer is not a communicable disease.* It is not possible to "catch" cancer from one who has it.

6. *Cancer is not inherited.* It is not certain even that a tendency to the disease is inherited.

7. The beginning of cancer is usually painless; for this reason its insidious onset is frequently overlooked, and is too easily neglected. *Other danger signals must be recognized and competent medical advice obtained at once.*

8. Every persisting *lump in the breast* is a warning sign. All such lumps are by no means cancer, but even innocent tumors of the breast may turn into cancer if neglected.

9. In women, *continued unusual discharge or bleeding* requires the immediate advice of a competent doctor.

10. *Any sore that does not heal,* particularly about the mouth or tongue, is a danger signal.

11. *Persistent indigestion* in middle life, with loss of weight and change of color, or with pain, vomiting, or diarrhea, call for thorough and competent medical advice as to the possibility of internal cancer.

12. *Radium* is a useful and promising means of treatment for some kinds of cancer. No medicine will cure cancer.

13. *Open warfare by open discussion* will mean the prevention of many needless deaths from cancer.

14. *The American Society for the Control of Cancer* is always "on the job" with information and suggestions.

Does It Pay to Employ an Industrial Nurse?—Yes. Because:

1. She gives first aid in case of injury, thereby preventing infection and shortening the period of disability.

2. She cares for minor ailments, thereby enabling the employees to contine work.

3. She is on the alert to prevent the introduction and spread of contagious diseases through the plant.

4. She prevents illness by giving instruction in ways of keeping well.

5. She advises regarding the correction of physical defects.

6. She teaches the common rules of hygiene and sanitation and advocates suitable precautions in the dangerous trades and operations.

7. She visits and arranges for the care of those absent because of illness, thereby making possible an earlier return to work. She helps and advises in case of family illness or trouble, thereby relieving the mind of the worried employee and enabling him to give his undivided attention to his work.

8. She is at all times the friend and coworker of the employees and interprets to them the plans of the employer for industrial betterment.—*Circular of National Org. for Public Health Nursing.*

✣

Health and the Industries.—It is now becoming recognized by employers of industrial labor who have given careful consideration to the subject, and also by industrial physicians and surgeons that, the work-producing capacity of a person depends more largely upon their physical and mental condition than almost any other factor. Broadly speaking, the hazards which confront industrial workers in a great many different lines of industry are of two kinds; hazards which cause accidents resulting in injury, and dangers which threaten the health of persons exposed to them.

The first or mechanical hazards are problems for the safety engineers, but the dangers which impair the health and cause sickness and death from various diseases are problems for the industrial physician, and if we are to secure and maintain high efficiency in a working force, both of these fundamental problems must receive the necessary and proper attention.—*Safeguarding Industry.*

The Social Unit in Cincinnati.—The committee appointed by the National Social Unit Organization to appraise the social work aspects of its activities during the past three years in the Brighton-Mohawk District of Cincinnati arranged with Dr. Edward T. Devine to study and report on the work for the committee. The following is Dr. Devine's conclusion as to the results: "Summing up the evidence in regard to results achieved, I am of the opinion that definite tangible and substantial results have been obtained; that they can be measured in the testimony of coöperating agencies and in the information applied by the executives and workers in the social unit and by the families in the district; but that they are not capable of a quantitive statement in statistical form. I have no doubt, from my observations and from the interviews which I have had with workers, residents, outside friends, and critics, that the social unit has added substantially to the physical and moral well-being of the residents of the district; that it has led to more efficient and discriminating relief, to more thorough and constructive diagnosis of the needs of families in trouble; that it has prompted neighborliness and sociability; that it has made the ordinary family residing in the district more hospitable to visitors who come with a helpful purpose, and more discriminating as to the probable effect of sanitary and social measures brought forward for their benefit." It is interesting to note the enthusiastic evidence of the residents of the district, who, in the face of newspaper criticism by the mayor of the city, recorded their desire by a vote of 4,434 against 120 that the social unit shall continue its work. —E. T. Devine, *Survey*, Nov. 15, 1919 (D. G.)

✣

Needs in Fighting Tuberculosis.—The tuberculosis worker who confines his interest and attention to the tubercle bacillus, its habitats and its habits, and particular measures directed against it and its effects and whose eyes are closed to all the non-specific factors, the inefficient teeth and the throats of children, the faulty habits and environment of the human being, the excesses of ordinary existence, whether they be excesses of labor, of play or of the passions, is not serving his cause well. He has failed to grasp the location and nature of the enemy's stronghold.

We shall get the grip on tuberculosis when we create a universal and correct public sentiment concerning it; then, and no sooner. To exhibit pictures of bacteria and cross-sections of the human torso and columns of figures to the dweller of the tenement whose belly cries for food and whose eyes are heavy with smoke and dirt, is brainless business, busy though we may seem to be. To show this man how his surroundings may approximate yours and to prove to him that you are working with him to make them so is making progress.

Our organizations must be enlarged ten and a hundred fold, and in every hamlet the preacher of public health must be as familiar and active a figure as the school teacher. We must enlist every newspaper syndicate in our cause and have them day in and day out lay the facts of the disease and its prevention before their readers.

I would repeat that tuberculosis, when associated with the matter of a programme against it, cannot be considered apart from the society in which it exists. And its real conquest must originate in the demands of the whole people that it be done away with; and these demands will never be made until everyone appreciates the situation.—A. K. Krause, Amer. Rev. of Tuberculosis, Nov., 1919. (*D. G.*)

✣

Reduction of Resistance to Tuberculosis.—The objects of the experiments reported by the author were to note the effect of trauma and of various mechanical and chemical irritants when applied locally upon the spread of tuberculosis in guinea pigs.

Using the microscopic anatomic tuberculosis as an index of the acceleration of tuberculosis in the guinea pig it was found that regional gland crushing, and the subcutaneous injection of turpentine, croton oil, tincture of cantharidin, and tincture of capsicum, used as local irritants just prior to the subcutaneous injection of virulent human tubercle bacilli in various sized doses, had no appreciable influence upon the progress of the infection as compared with that obtained in control guiena pigs. Lamp black injected subcutaneously co-incident with the tubercle bacilli had a distinctly retarding influence, while finely pulverized glass had a markedly accelerating influence, though not sufficient to be available for practical use in accelerating the guinea pig diagnosis for the presence of tubercle bacilli in pathological fluids.—H. J. Corper, Am. Rev. of Tuberculosis, Dec., 1919, 605. (*D. G.*)

Child Welfare.—The following is an abstract of the report of the Child Welfare Section of Red Cross Societies at the International Conference held at Cannes, April 1, 1919.

The work relating to child welfare may be divided into six parts, corresponding to the period of child life to which it is directed:

First. Eugenic consideration affecting the prospective parents.

Second. The prenatal period in which the child is saved through care for the mother. The essential feature in prenatal care must be the supervision and education of the expectant mother by trained public health nurse, midwife or health visitor, from an early period of her pregnancy, aided when possible by the advice and assistance of a physician. The work is greatly facilitated by voluntary registration of pregnant women, which should be encouraged everywhere, and it should be connected closely with maternity and child welfare centers.

Third. Obstetrical care, which should include the services of a nurse as well as those of a physician or midwife.

Fourth. Birth to school age. This period is sometimes divided into infancy—including the first year or possibly two years—and a pre-school age, extending from this time up to the fifth or sometimes the sixth year. The important concern during the first two years is the child's nutrition; and the essential thing is that the child be kept under continuous observation and supervision.

The principal methods are: (1) Group instructions and individual advice from some such central place as a "milk station," a child welfare station, a "consultation," etc., and (2) home visiting by public health nurses.

The problem of infancy up to the school period is much the same and can be carried on with the same organization—quarterly visits to the home or by the child to the central stations and a full medical examination once a year should be the minimum.

Permanent institutional care for infants and young children should be discouraged on account of the almost insuperable difficulties in maintaining nutrition in infancy under these conditions, and because of the great susceptibility of young children to infection, preference should be given to placing such children in suitable families.

Fifth. In the school period. From the sixth to the fourteenth or sixteenth year, the problem is to secure normal growth and physical and moral development, to recognize and correct defects which interefere with these, and to reduce to the minimum the risks of contagious disease. The school physician, the school nurse and the school teacher all have important functions. The school, furthermore, offers an opportunity, the value of which is only beginning to be appreciated, to interest, instruct and train the child himself in health matters. Health work for the school children is inextricably bound up with the problems of general education, and all teachers should receive training which would qualify them to teach the simple facts of health and personal hygiene.

Progress in the pupil's health is best shown by the weight chart; thus an incentive can be furnished for the observance of health rules which are taught. Health records, at least a record of weight and growth, should be kept during school life. In an ideal scheme, a medical examination should be made once a year of every school child, and those who are found to be physically below normal or who do not make a normal gain in weight should receive special attention and supervision during their school life.

Sixth. Industrial period from the fourteenth to the eighteenth year. In connection with legislation relating to child labor, the following fundamental principles should be embodied:

(a) No child should be allowed to enter industry without first passing a physical examination by a competent physician, showing that he is able to perform the work intended, and (b) no child should be permitted to continue in any form of work which prevents his normal growth and physical development as determined by accepted standards, and periodic examinations made up to the age of eighteen years.—*Amer. Jour. Dis. of Children*, Oct. 1919, 306. (*D. G.*)

Mental Defects in a Southern State.—The Georgia Commission on Feeblemindedness in coöperation with the National Committee for Mental Hygiene has made a survey of mental deficiency in this state which is summarized below:

Feeblemindedness was disclosed in 40 per cent of the inmates of almshouses; in 28.7 per cent of children in an orphange; in 17.5 per cent of the male inmates and 43 per cent of the female inmates of the State prison farm; in 34 per cent of the inmates of two typical county jails; in 44 per cent of 122 immoral women examined; in 17 per cent of delinquents studied in the juvenile court; in 15 per cent of those in a reformatory, and in 27 per cent of the inmates of the State Training School for Girls. It is these feebleminded delinquent children that later on become the chronic recidivists, as is seen in our jails, adult criminal courts, and state prisons. Finally, 3.5 per cent of the children examined in the public schools were found to be feebleminded. These are the children who are to become the "grist"of our future courts, jails, reformatories, and state prisons, and to form the very backbone of the vast and grim procession of paupers, criminals, and prostitutes of tomorrow.

The recommendations made include (1) a training school and farm colony for feebleminded persons, (2) special classes in the public schools, (3) mental clinics, (4) statewide supervision and (5) laws for the commitment of the feebleminded.—V. V. Anderson, *Mental Hygiene*, October, 1919, 527. (*D. G.*)

✚

Intestinal Flora and Nutritional Disorders in Children.—As a result of a clinical study the authors show: (1) that children, whose diet is well balanced and whose nutrition is normal, have an intestinal flora consisting of fermentative and putrefactive types without preponderance of either; (2) that children fed on large quantities of cow's milk have a more complex flora made up of various types, most of which are facultative putrefactors; (3) that in children who suffer from certain of the types of alimentary intoxication with malnutrition, the intestinal flora departs in a uniform manner from the normal, and that this departure is always characterized by the establishment of bacterial types predominantly putrefactive; (4) that the return of these children to normal health is coincident with a regression of the intestinal flora generally toward fermentative types and a later swing to balance between the two types; (5) that such changes in the intestinal flora can be brought about in the intestine of the human infant by withdrawing animal protein and persistently feeding large amounts of lactose (from 2 to 4 ounces daily), and other carbohydrates; that the period which may be necessary to produce this variation is from ten to forty days. While feeding acidophilus cultures has in a few cases aided a more rapid establishment of aciduric flora in the baby's intestine, this influence was not very great; (6) that the progressive cessation of the symptoms of intoxication and a return of toxemic patients to nutritional health coincides with the recognizable dominance of a fermentative flora (7) that lactose and dextrines are the carbohydrates most effective in encouraging the rapid establishment of a fermentative flora in the intestines of infants and children.—Porter, L., Morris, G. B., and Meyer, K. F., *Amer. Jour. Dis. of Children*, Oct. 1919, 254. (*D. G.*)

✚

Diet and Intestinal Bacteria.—Through the leadership of Metchnikoff and his followers it was believed that the bacterial flora of the intestinal tract could be controlled by consuming bacterial cultures of specific organisms. This theory is being replaced by another which is much more tenable, namely: that the diet determines the bacterial flora in the intestine. The incorporation in the regular diet of an individual of 8 to 10 ounces of lactose per day changed the normal flora of bacteria in the excreta, so that *B. acidophilus* predominated.—Jour. A. M. A., December 13, 1919. (*M. P. H.*)

□

Your State Campaign Manager Will Need Your Help in the Membership Campaign. Respond With Your New Member When He Calls.

STATE HEALTH—LEGISLATION

National.—S. 3829, introduced by Mr. Phipps early in February, purposes making an appropriation for the investigation of subterranean waters, especially the shallow underground waters and artesian wells of eastern Colorado.

+

Colorado.—The State Board of Health, Division of Venereal Disease, has issued in pamphlet form the regulations of the Division. These include the declaration of these diseases to be dangerous to the public health, the requirement of reporting, which is to be by number, the duties of physicians in keeping records, the duties of patients in reporting change of physicians and the various duties of different individuals, health officers, druggists, etc., in reporting. Dentists are included in the list of those who must report if they have reason to suspect infection. Remedies are to be sold only on prescription. Inmates of jails and institutions shall be examined. There are certain forbidden occupations, including food handling, laundry work, use of public swimming pools or tanks, and teaching, the prohibition last named including every kind of school or college. The regulations concern themselves next with clinics, in which the details of administration and technique are given and there follow sections with reference to unusual prevalence, placarding, permits necessary for change of residence, repression of prostitution and a punishment for giving false information.

+

Maine.—The new health laws require the employment by every community, either alone or in conjunction with some other community, of a local health officer, one-third of whose salary up to $800 may be paid by the state. Full time health officers, for groups of towns if necessary, are recommended by Dr. Leverett D. Bristol, commissioner.

An important decision has been rendered by the courts of Maine in the case, Ralph O. Stockman et al. vs. Philip F. Chapman et al. and Board of Health of the City of Portland, Me. This case involves the validity of the ordinance of the City Board of Health regulating the production and preparation of milk for sale within the city limits. The provision is that the Board shall "guard against all introduction of contagious and infectious diseases by the exercise of proper and vigilant medical inspection and control of all persons and things coming within the jurisdiction from infected places, or which for any cause are liable to communicate contagion." The last general clause invests the Board with very wide powers, namely, power to make provision against anything, which, "for any cause" is liable to communicate contagion. The phrase "liable to communicate contagion" gives full authority to prevent at the source, in the opinion of the sitting Justice, A. M. Spear.

The plaintiffs attacked six paragraphs of the Board of Health ordinance, related to Grade A milk and cream and Grade B milk and crean. Grade A milk is to be from tuberculin tested cows of below 100,000 bacterial count, put into the final container at the place of production; the cream Grade A shall be from Grade A milk with not more than 500,000 bacteria and the pasteurized milk Grade A shall have not more than 10,000 bacteria per cubic centimeter when delivered to the consumer. Grade B Milk shall be from cows passed by a qualified veterinarian with not more than 500,000 bacteria raw or 50,000 pasteurized when delivered to the consumer. Grade B cream shall never have passed 1,000,000 before pasteurization, and on delivery, not more than 200,000 for bacterial count.

The opinion lays stress on the fact that the regulations are for the purpose of controlling the healthfulness of the milk, and in no way to affect the price. They are necessarily drastic and place the burden of compliance on the party to be restricted or prevented, and these elements of personal or private interest must yield to the public welfare.

Many opinions are quoted in support of the principle upheld by Justice Spear that the State had a clear constitutional right to pass the statutes in question and the right to confer the exercise of its power to the municipal officers. The ordinances are not discriminatory, the conditions required can be complied with by every owner of a herd of cows, "nor" notes the Justice, "can I believe that any fair minded man would object to the employment of methods of cleanliness in the care and milking of his cows that will prevent, as far as possible, the introduction of injurious bacteria from negligent or insanitary conditions."

+

Massachusetts.—Through the operation of Chapter 350 of the General Acts of 1919, the name, "Department of Public Health" and "Commissioner of Public Health," are estab-

lished for the department and its chief executive, and certain changes have been made in the way of additions to its divisions. The control of the four state tuberculosis sanatoria together with the other functions of former Board of Trustees of Hospitals for Consumptives has been given to the Department of Public Health, and with this is to be combined the other work in this disease undertaken by the Department. A new Division of Tuberculosis has been created within the Department and Dr. William J. Gallivan has been appointed Director.

There are two bills before the Legislature which have bearing on the health of the community. The first of these is the proposed Health Education law, which provides for a director of health education and physical activities in the State Department of Education, local supervisors to help the director, one or more school nurses in every town and courses in the State normal and public schools in simple health habits.

A second bill has reference to school nurses, and provides that the school committee of every city and town in the Commonwealth shall appoint one or more school physicians, nurses, etc.

✚

Ohio.—Legislative attacks upon Ohio's model health law—the Hughes Health District Act—just before it was to go into full operation resulted in numerous important amendments to the measure. Chief among the effects of the new legislation are these:

(1) District boards of health may now employ part-time health commissioners if they so desire and are not required to maintain any other employes than the health commissioner.

(2) Civil Service provisions no longer govern appointments, general (county) district boards being without restrictions in this regard other than the requirement that the health commissioner must be a licensed physician and city district boards being without any restrictions.

(3) Performance of most of the duties required of district boards of health under the original law is now left to their option.

(4) All cities (which means all municipalities of more than 5,000 population in 1910) are now separate health districts; under the Hughes Law cities under 25,000 in population were combined with their respective general, or county, districts.

Two considerations influenced the changes in the health district law—financial stringency in many counties and a supreme court decision which indicated that the original law would be held in part unconstitutional.

Most local political units in Ohio are short of funds, because of the inadequacy of existing tax laws to provide enough money for necessary activities and also, in consequence, because of the growing burden of debt. The shortage of funds for health purposes was in part artificial, caused by the failure of local officials, in formulating their 1920 budgets last summer, to make provision for the change in health organization, despite notices filed with them in ample time by the State Department of Health.

The supreme court decision involved a law making a classification of cities similar to that of the Hughes Act, which latter measure provided different forms of health organization for cities above and below 25,000 in population. The similar classification was held to be in violation of the constitutional classification into cities and villages, and it was apparent that the Hughes Law district organization would be thrown out on the same ground if it were attacked in court.

Under the Griswold Law—the amended Hughes Law—the question of providing adequate health organization is left to the district board of health. Reorganization is now in progress, and among the earliest counties reporting are several which have provided for whole-time health commissioners and for one or more public health nurses. Health commissioners' salaries in the full-time positions are fixed in most instances at $3,000 and $4,000. In most districts the boards are making a sincere effort to obtain qualified men.

While the smaller cities under the amended law will in most cases be unable to obtain full-time service from their health commissioners, the provisions for voluntary union between a city and the surrounding general district offer a way out of this difficulty. Two general districts may also combine if they choose.

The State Department of Health feels that the new health system, even as amended, is a notable advance over the old township, village and city health district system, and that in the course of time it may produce results as good as those which were expected from the original plan laid down by the Hughes Law. The process of educating the public to a general appreciation of the benefits to be derived from adequate health organization will neces-

sarily make the process of development slow in some localities.

(V. E. McV.)

In its consideration of the new state health law in Ohio, Toledo in its *Toledo City Journal* makes the following statements with reference to its operation in cities possessing charters.

The Hughes Health Law, as amended by the Griswold Act, recently passed by the General Assembly of Ohio and allowed by Governor Cox to become effective without his signature, makes possible radical changes in the health administration of the state and of the cities of the state. Because it may be used by the City of Toledo at any time the following digest of its provisions is given here:

The act provides for a division of the state into health districts, each city constituting a city health district, and the townships and villages of each county comprising a general health district. Any two districts within the same county may be combined.

Procedure for organizing these districts is outlined in the act, but where a city charter has provided its own form of health administration, as in the case of Toledo, no change in that organization need be made.

Every district board of health is charged with the duty of studying and recording the prevalence of disease within its district and of providing for the prompt diagnosis and control of communicable diseases. It may also provide for the medical and dental supervision of school children, for the free treatment of venereal diseases, for the inspection of schools, public institutions, jails, workhouses, and other charitable and correctional institutions. It may also provide for the inspection of dairies, stores, restaurants, hotels and other places where food is manufactured, stored or offered for sale, and for the medical inspection of persons employed therein. It may also provide for the abatement of public nuisances dangerous to the public health and comfort.

The question of employing a part-time or full-time health commissioner is made optional with each district. In any case, when a health district has been organized according to the provisions of the act, and this fact has been certified to the State Commissioner of Health, the state will pay every six months one-half of the expenses entailed by that health administration, provided that the amount to be paid by the state shall in no case exceed $2,000 per year.

STATE HEALTH NOTES—GENERAL

National.—Over 200,000,000 tiny particles of dust, as sharp as ground glass, are breathed into the lungs and air passages with every cubic foot of air in some of the factories in the United States, according to a survey made by the Public Health Service here.

Such dusts breathed into the lungs are never expelled. Photomicrographs show the tiny particles to be exceedingly sharp and jagged and chemical tests prove them to be practically insoluble. Work under such conditions invites respiratory diseases and makes a real health hazard. Similar investigations in chemical factories showed that laborers were frequently exposed to poisonous fumes and gases.

As a result of a survey at Niagara Falls industrial hygiene engineers devised means of removing the dust from the air and minimizing hazards from fumes and poisonous gases. In spite of the fact that the installation of such devices was expensive, factory managements immediately put them into use.

At least 32,000 white children are born out of wedlock in the United States each year, and probably not more than 70 per cent of these children survive the first year of life, says a report on "Illegitimacy as a Child Welfare Problem," just issued by the Children's Bureau, U. S. Department of Labor. This report, which contains a general treatment of the prevalence and significance of the problem in this and other countries was written as an introduction to a more exhaustive study of the meaning, to the child and to society, of birth out of wedlock.

The most striking fact brought out is the very high infant mortality rate among these children, which in most European countries was found to be about twice that among children of more fortunate birth, and in three American cities was three times as high.

The children who do survive infancy are likely to be deprived of normal home life and a mother's care. Rarely do they receive the support from their father to which they should be entitled. In a large proportion of cases the public must assume the burden of the support of these children.

The American boy is a product of the American school. He is at the age then, between 15 and 20 years, when he will make himself physically strong, or weak, and form the ideals and habits that go with him through life. It is for this reason that the United States Pub-

lic Health Service has started a campaign in America to reach all of the boys between the ages of 15 and 20 years and interest them in a campaign to keep themselves physically fit. This is not with an idea of raising the boys to be soldiers, but because there is one young man in every three physically unfit, not only to be a soldier, but anything else that requires strong, vigorous manhood. This was revealed when the army had to reject one man in every three for physical disability.

✚

Cuba.—There have been established services of Child Hygiene in the cities of Pinar del Rio, Cardenas, and Santa Clara y Cienfuegos, with the intention to establish others from time to time. For executive officers the Secretary of Health has designated Senorita Martina Guevara, Chief of the Infirmary Department.

In July last there was imported from Spain on board the "Venezzia" the first case of smallpox registered in the island. Altogether 58 cases were found in the city of Havana, 5 of them in the Spanish sections. There were deaths of two children whose cases were concealed for several days from the authorities. Steps were taken towards the punishment of the persons responsible for the concealment.

For the study of the etiology of yellow fever Dr. Mario Lebredo has been named, he being the Director of the National Research Laboratory. Dr. Antonio Barreras, Director of the Service of Child Hygiene, has been delegated to study the problems of maternity and infancy as developed in the United States. The Secretary of Health has organized sanitary conferences in the work shops and factories of the Republic, at which many of the employees gather daily. Lectures are given with illustrations and motion pictures.

In consequence of the discovery of cases of bubonic plague in New Orleans the Cuban Department of Health has intensified its campaign of deratization. All ships are compelled to discharge away from wharves, and are subject to rigid regulations. Warehouses are watched and guarded, and especial attention is given to drains and sewers.

A campaign against malaria has been undertaken under the supervision of Dr. Florencio Villuendas, who through the local chiefs will put into effect some of the standard anti-Anopheles measures.

California.—The State Health Department has lost by death Mr. George D. Leslie, Statistician and Registrar of Vital Statistics since 1905, which occurred early in January. He has been succeeded by Mr. L. E. Ross who has been with the Department for a year, coming to it with large experience in public statistical work.

✚

Connecticut.—In the reorganization of the State Health Department a Bureau of Sanitary Engineering was created. For the information of the public, a statement is made by the Department enumerating the larger responsibilities imposed by statute on this Bureau.

(a) Advising and assisting any public official in regard to sanitary drainage, ventilation or other sanitary matters.

(b) Supervision over all matters pertaining to the purity of water and ice supplies.

(c) Investigation and supervision of existing and proposed sewerage systems and refuse disposal plants.

(d) General oversight of all inland and tidal waters in relation to pollution.

(e) Expert examinations and inspections of public institutions, buildings, structures and works.

Definite programs have been drawn for carrying out these various lines of work and considerable progress already made. Ten engineers, chemists and inspectors are now employed in this bureau on a full-time basis.

Previous to the establishment of this bureau all the engineering advice or assistance that could be given was that which the members of the State Board offered by letter or by consultation at their convenience. This was because the board did not employ an engineer and such service as was rendered by the board was gratuitous.

✚

Delaware.—On January 13th strong opposition to vaccination developed, in Georgetown, Del., manifesting itself in the "running out of town" of Mr. C. H. Wells, Special Health Commissioner. The situation has developed in an interesting way. The local Justice of the Peace ruled against the State Board in the complaints against leaders of the mob, and the fight is now on to prove the authority of the State Board to control epidemics in incorporated towns. As the situation stands, the question of vaccination is now of minor

importance, the real question being whether the State rule or regulation can be over ridden by any local incorporated town.

✚

Illinois.—An example of community co-operation has been shown in Chicago by the Stock Yards Community Clearing House. This is an organization for fostering community work in the Stock Yards district of the city, seven of the large houses centering about the industries here having joined in sponsoring the plan and in assuming the financial responsibility. The Clearing House undertakes to afford a means of co-operation in all that pertains to community betterment, and undertakes a community study, to be an outlook from which to gain an unprejudiced view of conditions as they are, a means of inter-communication between the various industrial, civic, religious and welfare organizations and furnish a means of co-operation in matters of relief in times of crisis. Just such a time came during the influenza outbreak and the Clearing House was able to establish an emergency hospital for forty patients, supply more than 8,000 meals to unfortunate families and furnish administration for the relief work.

The Chicago Municipality Dispensary has adopted the following standard in searching for the facts about the child's health:

(a) The diagnosis of tuberculosis in a child.

(b) "Contacts," all children now in association with an open case of tuberculosis, and children who have a definite history of prolonged exposure to tuberculosis.

(c) Those children falling under Classes III and IV in Dunfermline nutritional scale.

(d) Anemic children showing a hemoglobin under 80 per cent.

(e) Children below normal height and weight, and presenting associated conditions, which means a pathological state.

(f) Children who present conditions which cause them to be classed as "suspect," "pretuberculous," or "scrofulous," should be recommended for open-air school treatment.

✚

Indiana.—The Bureau of Venereal Disease of the Indiana State Board of Health was organized in July, 1918. Dr. William F. King, Assistant Secretary of the State Board of Health and Acting Assistant Surgeon, U. S. Public Health Service was made Director of the Bureau.

In the beginning a state wide educational campaign designed to ultimately reach every citizen of the state was planned. This campaign has been carried out by means of lectures, exhibits, distribution of educational pamphlets, moving pictures, and by securing the co-operation of all organizations and groups wherever possible. For the calendar year ending December 31, 1919, approximately 400,000 educational circulars have been distributed upon request and through general distribution. More than 300 lectures have been given before approximately 60,000 people. The moving picture film "Fit to Win" and "End of the Road" have been shown free to 25,000 people. "Keeping Fit" exhibits have been displayed in Y. M. C. A.'s and before high schools a total of approximately 500 days to 85,000 people. More than 100,000 small folders giving the social facts of the veneral diseases have been distributed to industrial employes through pay envelopes.

A campaign to secure the full co-operation of doctors and druggists throughout the state has been carried out with success.

Public Health Associations have been organized in 20 counties of the state, and this organization work will be continued in the hope of securing a similar organization in every county. It is realized that public education must be the final determining factor in veneral disease control, and for this reason the educational phase of the campaign has been given special emphasis.

Under the head of Repression, an attempt has been made to secure the co-operation of city and county officials, police departments and courts in the repression of prostitution. A model venereal disease control ordinance, in which is incorporated every essential provision for the control of the venereal diseases has been enacted in 65 of the 95 incorporated cities of the state.

Under the supervision of the State Investigator, a system of reporting, notification and transfer is being carried out through the entire state. No case of venereal disease in an infectious state is permitted to go from one health jurisdiction to another without permission of the health authorities at the point where travel begins and notification of others at the destination. A system of notification and follow-up through local investigators and local health authorities is carried out by means of which cases of venereal disease are required to be regular in their attendance at the free venereal disease clinics or to be regular in

carrying out treatment under private physicians under penalty of arrest and quarantine. The right of health officers to quarantine cases of venereal disease and to require attendance upon treatment has been up-held by city courts in several instances. The State Investigator co-operates with social workers and social service departments and in this way it has been possible to reclaim and re-establish a large number of individual cases as well as families.

Under the head of treatment, free venereal disease clinics have been established and are being maintained in most of the larger cities of the state. At the present time 18 such free venereal disease clinics are in operation. In the larger cities these clinics are maintained on a full time schedule, while in the smaller cities, the clinics operate only on part time, but on an average of two days and two evenings of each week.

This work has been carried on under an allotment made by the Federal Government through the Interdepartmental Social Hygiene Board of $29,366.20 annually for a period of two years. An additional appropriation of $29,366.20 made by the Indiana Legislature, and appropriations made by cities, and county councils for free venereal disease clinics, totalling $32,000 for the past year.

✚

Maine.—In preparation for more widespread health work in Maine during 1920, and in accordance with the new health laws enacted by the 1919 legislature several new district health officers have been appointed. The three original health districts created in 1917 have been increased to eight and the five new health officers are Dr. Clarence F. Kendall, with headquarters in Biddeford, his native city; Dr. G. H. Hutchins of Mechanic Falls, with headquarters at Presque Isle; Dr. E. P. Goodrich of Winterport, headquarters in Lewiston; Dr. J. W. Laughlin of Damariscotta, whose headquarters will be in his home town; and Alton S. Pope of Manchester, with headquarters in Waterville.

The State Department of Health has appointed a special investigator for the Division of Venereal Disease, selecting for the position Miss A. Eugenie MacDonald, who is a graduate of the Maine General Hospital. Following a war experience at Camp Stuart, Va., Miss MacDonald has been public health nurse with the Portland Board of Health.

Missouri.—In the latter part of 1919, the State Board of Health requested the U. S. Public Health Service to undertake studies and demonstrations in Child Hygiene activities and to organize this Division as provided.

One of the important activities will be the stimulation of birth registration from data obtained from house-to-house canvass, obtain better results and thus enable the state to be accepted in the Birth Registration Area.

Second, Field investigators will canvass localities selected to obtain information relative to the children of the infant and pre-school age.

Third, Modern health centers will be established to give children the benefit of medical attention. Prenatal supervision will be provided wherever possible or desirable. With the inauguration of a health center, it will be the purpose to have communities employ special trained nurses for permanent work in infant welfare. With the co-operation of the school authorities, social organizations, health supervision of school children will be established. They will be examined and where necessary, suitable treatment for defects will be recommended and facilities provided to make such treatment accessible.

One of the most important innovations will be the establishment of nutrition clinics conducted in the schools for the benefit of undernourished children.

✚

Nebraska.—Dr. W. H. Wilson, epidemiologist for the Nebraska state bureau of health, was appointed by the United States Public Health Service as collaborating epidemiologist with that Service for the state of Nebraska on December 4, 1919. Under this arrangement, the county superintendents of public instruction in this state, who are by law made secretaries of the county boards of health, are made assistant collaborating epidemiologists and are given the franking privilege. This enables the physicians over the state to report their contagious diseases to the county superintendents without the payment of postage, the county superintendents in turn reporting weekly to the state bureau of health.

✚

New Mexico.—The only hospital in the State solely for women and children has recently been opened in Albuquerque. It has

beds for 26 patients. The State Health Department has established a bacteriological laboratory to be conducted in co-operation with the Department of Hygiene of the State University. As a health movement the New Mexico Public Health Association is endorsing the campaign to establish at the University a building to be devoted to domestic science, the idea being, that bettered home surroundings and well cooked food are factors towards the promotion of health. A committee from the Albuquerque Woman's Club waited on the city commissioners recently asking an amendment to an ordinance in the interests of stricter supervision of those engaged in the business of handling food. The amendment requires not only an examination of the employee, but that a certificate of health for every one shall be posted in a conspicuous place in the establishment in plain view of the public.

+

New York.—New York City uses the Dunfermline scale of defective nutrition in its school medical inspection service. One year's grading resulted as follows:

51,238 (31 per cent) were found excellent (or No. 1).

87,823 (53.2 per cent) were found good (or No. 2).

19,564 (11.9 per cent) were found requiring supervision (or No. 3).

6,403 (3.9 per cent) were found requiring medical treatment (or No. 4).

In its report of work accomplished the Rensselaer County Tuberculosis Association notes that in the past 9 months 595 free examinations were made of the lungs with 95 positives. In co-operation with the State Department of Health and the State Tuberculosis Committee, 11 occasional clinics were held during the summer. A total of 2,200 visits were made by the nurses of the Association. In its educational work about 9,000 children were enlisted in the health crusade, 2,500 health primers were distributed and 1,000 copies of influenza and tuberculosis posters, together with 20,000 pieces of educational literature. The press work included some 250 notices. A lecture a week was given to the public including factory employees and lantern slides and motion pictures were also used.

In a recent investigation made by the New York State Department of Health of the sanitary quality of the public water supply for the City of Syracuse, an interesting question arose as to the elimination of tastes and odors due to algae growths. In the report of the Engineering Division on this investigation, suggestions were made for certain research and studies to be carried out in solving this problem. The question also arose as to whether the algae growths occurred in the lake or in the distributing reservoir or both and the novel method of applying copper sulphate at the upper end of the 20 mile conduit followed by aeration at the distributing reservoir was suggested as a promising remedial measure.

The public water supply of Cobleskill it was found that the Board of Water Commissioners are considering the installation of a closed coagulation and sedimentation basin to be operated under pressure in connection with the pressure mechanical filters now used to purify the supply.

+

Ohio.—There is the greatest interest throughout the State in fulfilling the requirements of the Griswold Act. By the middle of January seven counties had perfected organizations. Columbiana, Warren, Morrow, Geauga, Pike, Auglaize and Belmont counties.

An accurate summary of the activities of Ohio hospitals will be made available for the first time through annual reports for the year 1919.

A midwife of Warren has been fined $50 for violating the State law with reference to ophthalmia neonatorum. The woman failed to apply to the eyes of a baby at whose birth she officiated the prophylactic solution which a midwife is required by law to use at every birth, and failed also to report to the health authorities the eye inflammation which followed her failure to safeguard the infant's eyes. A physician to whose attention the case was brought several days later reported it, bringing about an investigation by a state nurse.

Progress in the campaign against venereal diseases in Ohio is recorded in a report just compiled by the State Department of Health, covering activities of the past year and one-half in this regard. Thirty-three free clinics in the state treated 7,466 patients during this period. Nine hundred and fifty patients deemed dangerous to the public health were quarantined. Nearly 1,000 lectures were given by Officials to audiences totaling more than

Board of Health and a second one on the pre- of types 1, 2 and 3 pneumonia. The board

120,000. More than 20,000 high school boys were reached through the "Keeping Fit" exhibit, conducted in co-operation with the state Y. M. C. A. organization. Three-fourths of a million pieces of literature were distributed.

While reports to the State Department of Health indicate a widespread prevalence of influenza, the disease has so far been milder in type than last year and no large number of cases of pneumonia have been reported. Although the epidemic is in practically all parts of the state, the department thinks it will spend itself in a comparatively short time.

With the return to the state of many physicians and nurses who were in military service last year, most communities have been able to provide adequate medical and nursing aid. In some localities, however, this service is inadequate and to these communities the State Department of Health has advised the formation of an emergency committee for making the best use of available physicians and nurses and for caring for those families who are unable to afford a private nurse. The number of cases is so large in many communities that any further increase would make necessary the opening of an emergency hospital. Should this need arise, the State Department of Health has advised all boards of health to make preparations for such action.

Breathing of exhaust-gas fumes in closed garages has killed two Ohio motorists this winter, according to reports reaching the State Department of Health. One of the recent victims was from Youngstown and the other from Van Wert. The Van Wert man started the engine to recharge his batteries. When his wife became alarmed at his failure to return, she called neighbors, who broke open the tightly closed doors and found him dead on the floor. The Youngstown case was similar, the victim being found dead, with garage doors shut, several hours after he had gone to the garage to repair his car.

✣

Utah.—This state has established the annual medical examination of school children as an essential part of the health education work of the schools. It urges the importance of the examination of children's teeth every six months. Both of these recommendations are defensible on the ground of safeguarding the welfare of the next generation, and if persisted in throughout life, will tend definitely to prolong the period of existence and increase the happiness of all who follow them.

Reports on the weight of school children are now being sent to the homes by the schools. An effort is being made to get children interested in their own growth and nutrition and to find out which children are definitely undernourished. It is desirable that parents know more about just what the schools are trying to do and the significance to be attached to serious under-weight.

Leaflets are distributed to the children in school giving to them some of the elementary principles of health. Here is a quotation from one of them:

Little Things that Keep you Well:

1. Have your own handkerchief. (a) In your pocket—not on the desk where it will get dirty. (b) Use it for keeping your nose clean—not for cleaning your desk or wiping apples. (c) Use it yourself. (d) Do not loan it to any other person; you may get some disease.

2. Use your own book. (a) Another may have disease germs on it.

3. Wear your own hat or coat. (a) Disease is easily spread this way. (b) Pediculosis thrives.

✣

Virginia.—A Health Conference was held in Richmond during the week beginning December 29, 1919. It was primarily intended for a post graduate course for those directly or indirectly employed by the State Board of Health. For the first three days sessions were held with the public health nurses. During the forenoon joint sessions were held, and in the afternoon there were section meetings to discuss subjects in which certain groups were especially interested. The conference lasted a week and proved of such value that it is the intention to make it a permanent institution, and to call into it all the health workers in the state. One of the speakers was Dr. L. L. Lumsden, U. S. P. H. S., on "The National Health Campaign." There were discussions on public health nursing, public health posters, health stories and plays regarding child hygiene, Red Cross Nurse, and Junior Health League. There were two symposiums for nurses taking up infant welfare work and inspection of school children; social service aspect of public health nursing, classes in home nursing and industrial nursing. Dr. Williams presented a story of the activities of the State

INDUSTRIAL HYGIENE AND

Board of Health and a second one on the prevention of diseases and classification of diseases from the standpoints of prevention. Water supplies, vital statistics, rural dispensaries, rural sanitation, public health organizations and tuberculosis were other subjects considered.

✣

Wisconsin.—The State Board of Health has adopted a code of rules governing the construction and maintenance of public comfort stations, which by a new law are compulsory in all cities and villages. This is the first state requirement of the kind on record. Many municipalities are already complying.

The State Board of Health voted in January not to recommend use of influenza vaccine or any other mixed vaccines for prevention of pneumonia or influenza. It endorsed, however, the efforts of the state laboratory of hygiene in supplying physicians of the state free of charge with vaccine for the prevention of types 1, 2 and 3 pneumonia. The board expressed its desire to establish at least one or two more co-operative laboratories.

A disease not akin to any previously encountered in the state, and of an intestinal nature, was rampant in parts of Sawyer and Bayfield counties, widely distant from each other, during January. Investigations made by the State Board of Health disclosed the principal symptoms to be abdominal cramps, vomiting, diarrhea, moderate fever, and profound prostration. Usually the illness was of a few days' duration and no deaths are known to have resulted.

Child health conservation measures instituted by the new bureau of child welfare are rapidly being adopted. Among recent advances have been the establishment of child health centers in a number of cities and the holding of state examinations for county nurses, or health instructors, required in all counties under a new law.

Conventions, Conferences and Meetings

March 22-23, New York City, New York State Medical Society.

April 6, Newark, N. J., N. J. State Nurses' Association.

April 6-8, Atlanta, Ga., National Organization for Public Health Nursing.

April 6-8, Jefferson City, Mo., Missouri State Medical Association.

April 12-17, Atlanta, Ga., National Organization for Public Health Nursing.

April 14-21, New Orleans, National Conference of Social Workers.

April 14-21 New Orleans, American Association of Hospital Workers.

April 19, Charlotte, N. C., North Carolina State Health Association.

April 20-21, Austin, Texas, Conference of County and City Health officers.

April 20-22, Charlotte, N. C., Medical Society of North Carolina.

April 20-22, Anniston, Ala., Medical Association of the State of Alabama.

April 22-24, St. Louis, Mo., National Tuberculosis Association.

April 26-30, New Orleans, La., American Medical Association.

April 29-30, Bismarck, N. D., North Dakota State Nurses' Association.

May 11-12, Indianapolis, Ind., Indiana State Health Association.

May 12-14, Des Moines, Iowa, Iowa Medical Association.

May 12-14, Des Moines, Iowa, Trudeau Society.

May 20-24, Brussels, Belgium, Congress of Royal (English) Institute of Public Health.

May 24-26, Omaha, Neb., Nebraska State Medical Association.

May 24-26, Omaha, Neb., Nebraska State Health Association.

May 25-26, Toronto, Ont., Ontario Health Association.

May 25-27, Columbus, Ohio, Ohio Hospital Association, New Jersey.

June 1-4, Cleveland, Ohio, American Medico-Physiological Association.

June 3, Providence, R. I., Rhode Island Medical Society.

June 3-5, Portland, Ore., Oregon State Medical Association.

June 9, Boston, Mass., Massachusetts Medical Society.

June 15-16, Minot, N. D., North Dakota State Medical Association.

June 22-24, Vancouver, B. C., Canadian Public Health Association.

June 23-25, St. Paul, Minn., Catholic Hospital Association.

INDUSTRIAL HYGIENE AND OCCUPATIONAL DISEASE

Abstracted by Drs. E. R. Hayhurst, R. P. Albaugh, P. M. Holmes, and E. B. Starr.

Medical Service an Industrial Stabilizer.—Under this title appears a very important article by Dr. Selby. Among many answers which he quotes in reply to the question "Why do you have a medical department?" which was asked of factory managers whom he saw in person, is one as follows: "It is as necessary as a cost department or any other non-producing department." The effects of such a department in reducing labor turnover and in increasing wages are shown by statistics. Seven reasons are given why such a department is good business. In addition, service for small plants and the creation of community bureaus for the same is discussed. To be effective, industrial medicine must not be limited to the care of injuries but its value is determined largely by its use in the prevention of disease among workers. *The medical department had best be answerable directly to the plant head* rather than subsidiary to any other department of the plant. Physicians who intend going into industrial service should seek special training in that direction. Trained nurses are in greater demand in industrial dispensaries than any other class of attendants. Industrial medicine is not only humane but essential to production. It is beneficial to workers and profitable to employers. It offers splendid advantages to physicians for the development of careers in a field of rapidly growing importance, vital with opportunity for service to humanity. A recommendation is made that medical colleges be induced to provide courses of instruction in industrial sanitation and medicine, and that affiliations be arranged between the colleges and industrial plants.—C. D. Selby, *Hospital Management*, December, 1919, pp. 58-64.

✚

Special Investigations of Industrial Skin Diseases.—The special committee of the Health Service Section of the National Safety Council has undertaken the investigation of industrial skin diseases, and a questionnaire has been sent to members asking information on this subject. Dr. Carey P. McCord, Department of Industrial Medicine and Public Health, University of Cincinnati, is the chairman of the committee and any having information or desiring information on the subject should communicate with Dr. McCord. A list of the industries and trade processes in which industrial skin diseases are known has been prepared and is distributed by the *National Safety Council*, 168 North Michigan Avenue, Chicago, Illinois.

✚

Twenty Suggestions to Industrial Physicians and Surgeons.—It would pay any industrial physician or surgeon to read Dr. Selby's four-page article in the original upon this subject. How to place workers, hygienic supervision of working conditions, the opportunity for research, the necessity for securing sufficient authority in the plant are laid down in the suggestions.—C. D. Selby, *Modern Hospital*, June, 1919, pp. 455-458.

✚

The Journal of Industrial Hygiene devotes an entire issue to papers delivered before the Health Section of the National Safety Council, at its Congress recently held in Cleveland.—(*Jour. of Ind. Hyg.*, Dec., 1919.). The papers include the following: "Industrial Health Hazards," Charles A. Lauffer, M.D., Medical Director, Relief Department, Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa.; "Scope of the Physical Examination in Industry," C. D. Selby, M.D., Toledo, Ohio; "Industrial Dermatoses, Their Sources, Types and Control," William Allen Pusey, A.M., M.D., Chicago, Professor of Dermatology, University of Illinois; "The Treatment of Burns," W. Irving Clar, Jr., M.D., Medical Director, Norton Company, Worcester, Mass.; "Industrial Clinics in General Hospitals," David L. Edsall, M.D., Harvard Medical School, and Chief of East Medical Service, Massachusetts General Hospital; "Health Education in Industry," W. A. Evans, M.D., Health Department, Chicago Tribune, Chicago; "The Co-ordination of Industrial and Community Health Activities," C. E. Ford, M.D., Medical Director, General Chemical Company, New York City; "Malingering—Involving the Problem of Getting the Sick or Injured Employe Back to Work," Judson C. Fisher, M.D., New York City.

What the Workingman Thinks of Health Welfare.—James H Maurer, president of the Pennsylvania Federation of Labor, sends a letter to the Editor, Department of Industrial Welfare, *Modern Hospital*, (August, 1919, pp. 136-137) which the Editor prints in full, at the same time disagreeing with some of Mr. Maurer's conclusions. Space does not permit recopying President Maurer's letter here, but he maintains that such service is not free but that the consumer pays for it. The work is often abused as when a company physician causes a worker to lose two weeks' working time without compensation because of a slight injury, on the plea that to remain at work might cause infection. Compulsory physical examination means discrimination to many maimed workers and those suffering from occupational disease. No one would seriously object to the efficiency aimed at, if such handicapped persons were properly placed and then not exploited because of their infirmities. Concerns that demand physical examinations seldom have in mind the placing of defectives; they want the physically sound. There are shining exceptions, however, to this common rule and where real physicians are employed in examining employes at regular periods to keep them in the best possible physical condition, such is to be commended. "Compulsory physical examinations by the employers' doctors and the plant stuck full of safety-first signs does not appeal to the worker who sees all around him unguarded machinery, pitfalls, death-traps and general all-around insanitary working conditions and whose income may compel him to live in some disease-breeding shack or tenement. The first great step in the conservation of human life and energy is not free medical or surgical treatment but to learn the mystery of our own bodies, tear aside the cloak of sham and modesty, learn how to live clean lives, quit driving the workers to the point of exhaustion, eliminate the profiteer, stop the exploitation of labor and there will be little need for the medical service."

✚

The Influence of Alcohol on Manual Work.—The British Medical Research Committee arrived at the following conclusions: Small doses of alcohol, well within the limits of what would be deemed by all moderation, do not sensibly affect the *speed* of performance of such semi-automatic operations as typing a memorized passage or setting down and adding a row of figures on a mechanical calculator, but gravely depreciate the *accuracy* of performance. Two glasses of port wine in a person accustomed to drink a glass of wine have this effect when the wine is taken with food. Less than this is sufficient to produce a result if taken on an empty stomach. Should the task set be very familiar to the subject, the foregoing conclusion does not hold.—*London Letter, J. A. M. A.*, Sept. 20, 1919, p. 926.

✚

Sanitary Survey of Schools and Factories in Framingham.—Among the various activities of the Framingham Tuberculosis Demonstration has been included effects of school and factory life. The first twenty pages of the bulletin at hand, which is illustrated, is devoted to the schools, another forty-two pages to factories and appendices showing classifications and forms used. In factories, special attention is given to the subjects of dust and ventilation and safety and general sanitary features. The dust and ventilation studies show it is necessary to take into account visibility, weight, count, size and character of the properly collected dust particles. The dust hazards were found greatest in woodworking industries, next in foundry work and least of all in the woolen industries, judged almost altogether from the point of view of the probable relationship of abrasiveness to pulmonary tissue irritation. Much improvement is needed in the matter of protective devices against mechanical hazards, in fire-drills, in first-aid and rest rooms and in safety organization in the plants. Special defects included hazards of which dry-sweeping methods, poor illumination, incidental subjection to lead, common drinking cups, etc., are examples. "It is evident from the several industrial surveys that from one-third to two-thirds of the plants present poor, dangerous, or inadequate facilities or equipment with regard to practically all of the hygienic factors considered." The biggest problem is found in the smaller industries. No great industrial poison hazards existed. The solution depends largely upon the personal factor, and therefore on an effective program of education as to personal hygiene. The plants also need more adequate personnel for medical, nursing and clinic service.—Donald B. Armstrong, Executive Officer, *Framingham (Mass.) Tuberculosis Demonstration*, (Monograph No. 6).

PUBLIC HEALTH LABORATORY NOTES

Abstracted by Francis H. Slack, M. D., and Mr. James M. Strang.

Value of Complement Fixation Test in Gonococcal Infections.—The article is based on 840 tests made on 625 persons.

A positive result is, in the opinion of the authors, strongly indicative of active gonococcal infection. Only one case of known gonorrhea remained negative on second test. A single negative finding is not conclusive but a second negative in two or three weeks is strong presumptive evidence of absence of infection.

A continuously strong positive reaction indicates the presence of an active focus of the disease.—H. B. F. Dixon, *Lancet*, London, Nov. 29, 1919, p. 964.

✚

A New Stain for Diphtheria Bacilli.—Two solutions are used:

Solution No. 1

Toluidin blue	0.15 gm.
Acetic acid (glacial)	1.00 cc.
Alcohol (95%)	2.00 cc
Water (distilled)	100 cc.

Solution No. 2

Iodin	1 gm.
Potassium Iodid	2 gm.
Water (distilled)	300 cc.

Smears are made, fixed with heat and stained with solution 1 for five minutes. The slides are then drained without washing and the iodin solution applied for one minute. Wash with water, dry and examine. The granules of the bacilli are stained black, the bars take a color varying from dark green to black, and the intermediate portions, as well as other bacteria, take a light green.—Henry Albert, M. D., *Jour. A. M. A.*, Jan. 3, 1920, p. 28.

✚

A Benzidin-polychrome Stain for Blood.—This method is advantageous for the accurate classification of endothelial leucocytes, the granules of which stain dark brown as do those of the eosinophils. All the other blood elements are colored as in the simple Wright's stain. The stain is applied to the smear as follows: On a 22 mm. square cover glass (No. 1), 4 drops of 80 percent. methyl alcohol, to 25 cc. to which there has been added 100 milligrams of benzidin (Merck or that obtained from the Will corporation) and one drop of hydrogen peroxid, are placed for thirty seconds; this is diluted with 8 drops of distilled water and 4 drops of polychrome stain (Wright's blood stain), are added. The diluted stain is allowed to act for four minutes and then it is washed, blotted, dried in the air, and mounted in balsam. The benzidin solution keeps for several weeks. The depth of the granule stain is much increased by diluting the benzidin reagent with a phosphate solution having a hydrogen-ion concentration of PH 6.4.

The author gives directions for the preparation of the phosphate solution and also for the preparation of a glycerinized polychrome stain which keeps indefinitely.—F. A. McJunkin, M. D., *Jour. A. M. A.*, Vol. 74, No. 1, 1920.

✚

Diagnosis of Diphtheria by Direct Microscopic Examination.—Dr. Lowry emphasizes the advantages of a direct microscopic examination in the diagnosis of diphtheria. The details of his technic are given in full, of which the following is a summary. The swab is first inoculated on the blood serum at the bottom of the culture tube which is allowed to soak into the cotton. After one to two minutes the serum fluid is expressed from the cotton by a special flat stick and spread on two slides. As the slides dry gradually, the liquid is stirred up to break the clumps of bacteria. One slide is stained in a slightly modified Neisser with Vesuvial counterstain, the other with Raux. A description of the K-L bacilli with these stains is given, also the pseudo forms. In 100 recent examinations, 65 cases were found positive by the direct method and 78 by the culture. Fifty-eight percent. of the positive diagnoses were therefore obtained within half an hour of their arrival at the laboratory, an increase of 5 percent. over the previously described direct method.—Lowry, *Ann. Inst. Path.* 1919, 33, 713.

Experiments on the Role of Flies in Dissemination of Trachoma.—A fly coming in contact with a trachoma infected eye is able to transmit this infection at any time within the following twenty-four hours. It can similarly transmit the disease if it comes in contact with infectious material (handkerchiefs, pillow cases, etc.) that have been infected within six hours. Under the same condition and with the same delay, flies are incapable of transmitting acute conjunctivitis. Without doubt the fly plays an important role in the spread of trachoma. It is important therefore to recognize the necessity for screening hospitals in which trachoma patients are cared for. Nicolle, Cuenod & Blanc, *Revue Sci.*, Dec. 20, 1919. (*H. N. C.*)

✣

Preparation and Conservation of Sera and Vaccines by Dessication in an Absolute Vacuum.—The authors have studied the methods of conserving dried vaccine reduced to a fine powder and sealed in vacuum tubes. They mention several methods of obtaining this vacuum, noting that it is important to keep the condensation apparatus at a temperature of less than minus 80° C. D'Arsonval-Dewer tubes containing 5, 10, or 15 grams of dried vaccine in absolute vacuum have been prepared which allow it to be transported, maintaining its original activity, to regions where the daily temperature is in excess of 55°.—C. F. Borgas, *Revue Sci., Oct.* 18, 1918, (*H. N. C.*)

Achalme and Phisalix at a recent session of the Academy of Sciences, Paris, report a confirmation of this and cite their experiments followed in 1908-1909. They mention that this method is in constant use in certain African Colonies, particularly in English East Africa, where the laboratory prepares, each year, by this method, a quantity of vaccine.

✣

Action of B. Typhosus on Xylose and Other Sugars.—A detailed account is given of the work done at the Army Medical School with reference to the subdivision of *B. typhosus* into groups. Fermentation of xylose has been shown to be present in 116 strains from various sources. Where fermentation of xylose was so slow as to be reported absent by earlier workers, the authors have demonstrated the presence of this power, and that rapidly fermenting subcultures could readily be prepared. Cultures which produced acid in arabmose broth very slowly, or apparently not at all, have developed this power on sub-culturation. In view of these experiments, and the many contradictions found in the literature, the authors conclude that there is no justification for the subdivision of *B. typhosus* into separate groups.—Teague and Morishima, *Jour. Inf. Dis.* 26, 52.

✣

Experimental Researches on Streptococcic Immunity.—The authors obtained a more active serum by injecting a single large dose of streptococcus culture into a house than by any other method. The serum protected mice against the same strain of streptococcus and to a slight extent against other strains.—Vinaver and Frasey, *C. R. Soc. Biol.*, 82, 1919, 606; *Bull. Inst. Past.*, 17, 1919, 22.

✣

Non-Lactose Fermenting Organism from the Feces of Influenza Patients.—Attention is called to the relatively high percent. of euteriditis-like organisms which are found in the feces of influenza patients but not of normal controls. The authors feel that their findings warrant more extensive investigations of the gastro-intestinal tract during the disease. —Sherwood, Downs, McNaught, *Jour, Infec. Dis.*, 1920, 26, 16.

✣

Bacteriology of Chronic Empyema.—In studying the bacteriology of chronic empyema, the author used a modification of the West tube for obtaining representative samples of the flora of the pleural cavity. The results with this method were more consistently satisfactory than with unprotected needles. The tube is also an important element in the standardization of the technique.—J. E. Gendan, *Jour. Inf. Dis.* 1920, 26, 23.

✣

Living Microörganisms in Paper.—During the various processes which paper pulp undergoes in its manufacture, microörganisms are not destroyed. All paper contains in its fibres bacteria which can be cultivated. Time apparently has no effect on these intracellular organisms. A fragment of papyrus of the epoch of Ptolemy, that is to say nearly 200 years B. C., was soaked in water for three hours. From this were obtained intracellular organisms which held immovable for so many centuries where shown to be still possessed of movement.—Galippe, *Revue Sci.*, Nov. 15, 1919 (H. N. C.)

(Continued on Page XX, Advertising Section)

The Human Side of Service

More than a year has passed since the signing of the Armistice, yet all the world still feels the effects of the War. The Telephone Company is no exception.

More than 20,000 Bell telephone employees went to war; some of them never returned. For eighteen months we were shut off from practically all supplies.

War's demands took our employees and our materials, at the same time requiring increased service.

Some districts suffered. In many places the old, high standard of service has been restored.

In every place efforts at restoration are unremitting. The loyalty of employees who have staid at their tasks and the fine spirit of new employees deserve public appreciation.

They have worked at a disadvantage but they have never faltered, for they know their importance to both the commercial and social life of the country.

These two hundred thousand workers are just as human as the rest of us. They respond to kindly, considerate treatment and are worthy of adequate remuneration. And the reward should always be in keeping with the service desired.

AMERICAN TELEPHONE AND TELEGRAPH COMPANY
AND ASSOCIATED COMPANIES

One Policy *One System* *Universal Service*

On the Existence of a Multiplicity of Races of B. Influenzæ as Determined by Agglutination and Agglutinin Absorption.—The results recorded indicate that under the term *B. influenzæ* we are dealing with a group of organisms which, for practical purposes, is heterogeneous in character, as determined by immunological reactions. We have evidences of the existence of small subgroups. The actual frequency with which identical strains would be encountered could only be determined by the use of many more sera than we employed. Our own results, however, indicate at least that identical strains would be infrequently encountered.

The existence of a multiplicity of races is advanced as evidence that *B. influenzæ* is not the primary etiological agent in epidemic influenza.—Eugene Valentine and Georgia M. Cooper, *Jour. of Immunology*, Sept. 1919, 359, 379.

✚

Observations on the Production of an Anti-hæmotoxin for the Hæmotoxin of B. Welchii.—By the immunization of animals with the hæmolytic substance produced in milk by *B. welchii* and anti-hæmolysin or anti-hæmotoxin of a strength of 1-1000 to 1-1250 has now been produced.

The demonstration that this substance can act as antigen offers the final proof that it belongs to the group of true bacterial hæmolysins or true hæmotoxins.—Ford and Williams, *Jour of Immunology*, Sept. 1919, 385, 392.

✚

The Antigenic Property of the Pfeiffer Bacillus as Related to Its Value in the Prophylaxis of Epidemic Influenza.—Duval and Harris during the influenza epidemic in New Orleans vaccinated more than 5,000 persons with a specially prepared protein suspension of the influenza bacillus. Of this number about 90 percent. did not contract influenza, either during the epidemic or its recrudescence some months later, and it is argued that a considerable degree of protection was afforded. The complete treatment consisted of three subcutaneous doses (1 billion, ½ billion and 1 billion) killed *B. influenzæ*, allowing an interval of three days between the inoculations.

The vaccine was prepared by devitalizing saline suspensions of *B. influenzæ* through the addition of chemically pure chloroform, later removed by sedimentation and evaporation, for which method the authors claim distinct advantages.—Duval and Harris, *Jour. of Immunology*, Sept. 1919, 317, 330.

✚

Complement Fixation in Diagnoses of Tuberculosis.—The author finds that the complement-fixation test for tuberculosis using an alcoholic extract of *B. tuberculosis* as antigen, has neither diasnostic nor prognostic value. A comparison of the results of series of tests with the clinical findings showed a lack of specificity of the antigen.—Moursund, *Jour. Inf. Dis.* 1920, 26, 83.

✚

Seropathic Investigations in Ambulant Fever.—Horse serum prepared by the injection of the endotoxin of *M. melitensis* and *paramelitensis* has given good results in the treatment of the chronic form of Mediterranean fever.—Sergent et L'Heritier, *Ann. Inst. Path.* 34, 1919, 336; *Bull. Inst. Path.* 27, 22, 1919.

✚

Phenol—Red China Blue Indicator in Fermentation Tests of Bacterial Cultures.—A new indicator is described for use in sugar broths. Sterile broth is practically colorless. The production of acid causes a green to blue coloration, of alkali, pink. This indicator may also be used in solid media such as Endo, where it may replace the decolorized fuchsin. —*Morishima, Jour. Inf. Dis.* 1920, 26, 43.

✚

Experiments in Vaccination Against Dysentery Due to the Bacillus of Shiga.—In the dejecta from convalescents from dysentery of the Shiga type, M. d'Herelle recently discovered what he calls a "microbe filtrant bacteriopage." This, placed in contact with the bacillus of dysentery, causes the disappearance of the latter through a sort of dissolution. It is possible by means of this product (bacteriolysin) to immunize the smaller laboratory animals. Inspired by this work, the author undertook experiments in inoculating rabbits against the Shiga bacillus. He demonstrated that a single intravenous injection of the bacteriolysin in question would make rabbits able to resist a quantity of the toxin of the Shiga bacillus many times the amount of a minimum lethal dose. There is reason to hope that if these lysins do not set up in man too strong a reaction that they may be used in an innoculation against dysentery.—Tamezo Kabeshima, *Revue Sci.*, Dec. 1919. (*H. N. C.*)